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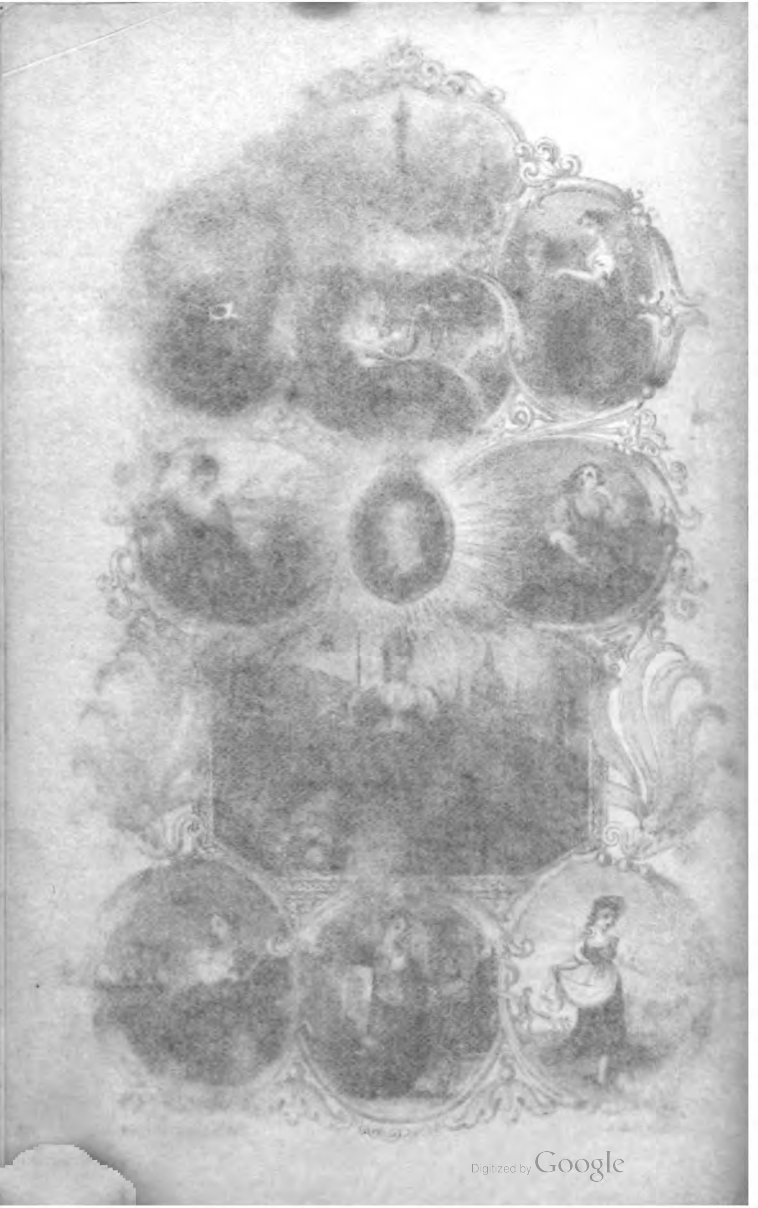

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lives of eminent men, who by their private virtues or public deeds, by the efforts of genius or the impulses of philanthrophy, excite our admiration, and afford examples for posterity to emulate.

BIO'TA, in zoology, a genus of sea-in sects, of a cylindric, but variable figure, with the tentacula arranged in a single series round the aperture of the mouth, at the extremity of the body. Among the several other species of this genus is the polype.

BIPAR'TITE, in botany, an epithet for the corolla, the leaf, and the perianth, when they are divided into two parts at the base.

BIPEN'NIS, in Roman antiquity, an axe with a double edge, one of which was used in stabbing, and the other in cutting.

BIQUAD'RATE, in algebra, an obsolete term for the square of the square; as, 16 is the biquadratic power of 2; for 2 + 2 is 4, and 4 × 4 is equal to 16.——BIQUADRATIC ROOT of a number, is the square root of its square root: thus the biquadratic root of 81 is 3; for the square root of 81 is 9, and the square root of 9 is 3.——BIQUADRATIC EQUATION, an equation where the unknown quantity of one of the terms has four dimensions.——BIQUADRATIC PARABOLA, in geometry, is a curve line of the third order, having two infinite legs tending the same way.

BIQUIN'TILE, in astronomy, an aspect of the planets, when they are distant from each other by *twice the fifth* part of a great circle, that is, 144 degrees.

BIRD'-BOLT, a small arrow with three heads, which was discharged at birds from a cross-bow. The bird-bolt is still used as a bearing in coat armour.

BIRD-CATCHING, the art of taking birds or wild fowl by birdlime, nets, and decoys, which, as respects the more artful modes of catching birds, is called fowling.

BIRD'LIME, a glutinous substance, made of the bark of holly, which is spread on the twigs of trees to catch birds.

BIRDS'-NESTS, in cookery, the nest of the *hirundo esculenta* or Indian swallow, very delicately tasted, and frequently mixed among soups. On the sea-coasts of China, at certain seasons of the year, there are seen vast numbers of these birds: they leave the inland country at their breeding time, and come to build in the rocks, and fashion their nests out of a matter which they find on the shore, washed thither by the waves. The nests are of an hemispheric figure, of the size of a goose's egg, and in substance much resemble the ichthyocolla or isinglass. They are esteemed a great luxury, and sell at a high price.

BISH'OP, a prelate, or person consecrated for the spiritual government of a diocese. In Great Britain, bishops are nominated by the sovereign, who, upon request of the dean and chapter for leave to elect a bishop, sends a *congé d'elire*, or license to elect, with a letter missive, nominating the person whom he would have chosen. The election by the chapter must be made within twelve days, or the king has a right to appoint whom he pleases. The jurisdiction of a bishop of the church of England consists in collating benefices, granting institutions, commanding inductions, taking care of the profits of vacant benefices for the use of the successors, consecrating churches and chapels, ordaining priests and deacons, confirming after baptism, granting administrations, and taking probates of wills; these parts of his function depend upon the ecclesiastical law. A bishop is also a peer of the realm.

BISHOP'S COURT, an ecclesiastical court, held in the cathedral of each diocese, the judge whereof is the bishop's chancellor, who judges by the civil and canon law; and if the diocese be large, he has his commissaries in distant parts, who hold what they call consistory courts, for matters limited to them by their commission.

BISIL'IQUOUS, in botany, an epithet for plants contained in two distinct pods.

BIS'MUTH, one of the brittle metals, of a reddish or yellowish-white colour and a lamellated texture, and moderately hard and brittle: so that it not only breaks into pieces under the strokes of the hammer, but may even be beat into powder. Bismuth is more commonly found in a native state than any other semi-metal. Most metallic substances unite with bismuth, and are thereby rendered more fusible than before; hence it is used in making solder, printer's types, pewter, &c.

BIS'ON, or Wild Ox, a quadruped of the bovine genus. It has short, black horns, very wide at the base; and on the shoulders is a large hunch, consisting of a fleshy substance, which, with the head, is covered with a long undulated fleece, divided into locks. In winter, the whole body is covered in this manner; but in summer, the hind part of the body is naked. The tail is about a foot long, with a tuft of hairs at the end. The fore parts of the body are very thick and strong; but the hind parts are slender and weak. These animals inhabit the interior of North America, and some of the mountainous parts of Europe and Asia.

BISSEXTILE, or LEAP-YEAR, a year consisting of 366 days, and happening every fourth year, by the addition of a day in the month of February, which that year consists of 29 days. And this is done to recover the six hours which the sun takes up nearly in his course, more than the 365 days commonly allowed for it in other years.

BIS'TRE, or BIS'TER, the burnt oil extracted from the soot of beech-wood, which is used as a brown pigment by painters.

BIS'TORT, or SNAKE-WEED, a species of Polygonum, the roots of which, when medicinally applied, are powerfully astringent and antiseptic.

BISTOURY, a small surgical knife, of various forms, according to the purpose for which it is intended.

BISUL'PHURET, in chemistry, a sulphuret with a double proportion of sulphur.

BIT, in carpentry, a boring instrument

BIRDS WHICH REGULARLY PAIR ARE CALLED "MONOGAMOUS," (MARRIED TO ONE); THOSE WHICH DO NOT, ARE CALLED "POLYGAMOUS."

IT IS SAID THAT HERDS OF TEN THOUSAND WILD "BISONS" ARE OFTEN SEEN ON THE MISSISSIPPI, EACH WITH ITS ARRANGED SENTINELS.



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BUSINESS THE LAST CENTURY IT WAS CUSTOMARY TO SEND WOVEN GOODS FROM ENGLAND TO HOLLAND TO BE "BLEACHED."

**BLAST'ING-BELLOWS**, instruments used when greater heat is wanted than could be obtained by the common accession of the air. Sometimes they have a wheel turned by water or steam, and the shaft, being provided with projecting pieces, raises and lowers the upper sides of these enormous bellows which discharge their volumes of air into the furnace.

**BLA'ZONRY**, or **BLA'ZONING**, that branch of heraldry which consists in expressing in proper terms all that belongs to coats of arms. The word is from the German *blasen*, to blow, because the herald blew a trumpet, and called out the arms of a knight, when he entered the lists at a tournament.

**BLEACH'ING**, the process of whitening linen by exposure to the sun and air; or, as is now more commonly in use, by the application of chemical preparations; such, for instance, as oxymuriatic acid, or sulphuric acid combined with chloride of lime.

**BLEIME**, in the veterinary art, an inflammation arising from bruised blood between the horse's sole and the bone of the foot towards the heels.

**BLENDE**, the ore of zinc.

**BLIGHT**, a general name for various distempers incident to plants, corn, fruit-trees, &c.; the whole plant sometimes perishing by it, and sometimes only the leaves and blossoms, which will be scorched and shrivelled up, the rest remaining green and flourishing. The chief cause of blights seems to be a continued dry easterly wind for several days together, without the intervention of showers, or any morning dew, by which the circulation of the vegetable juices is stopped. Another cause of blights in the spring is sharp hoar frosts, which are often succeeded by hot sun-shine in the day-time: this is the most sudden and certain destroyer of fruits that is known. A third kind originates in *fungi*, which attack the leaves or stem of herbaceous and woody plants, and more particularly the most useful kinds of grain. These are variously known to farmers by the name of *red rust*, *red gum*, &c.

**BLINDS**, in the military art, a sort of defence made of osiers or branches interwoven, and laid across two rows of stakes, about the height of a man, and four or five feet asunder, used particularly at the heads of trenches, when they are extended in front towards the glacis; serving to shelter the workmen, and prevent their being overlooked by the enemy. The word *blinds* is, in fact, used to denote all preparations which are intended to intercept the view of the enemy; and they are of course variously constructed, according to the situation or means of providing them.

**BLI'NDNESS**, a total privation of sight, arising from an obstruction of the functions of the organs of sight, or from an entire deprivation of them. The causes of blindness are various, proceeding from cataracts, gutta serena, &c. There are also kinds of periodical blindness, as a defect of sight in some towards night, in others only in the day; the former of which is termed *nyctalopia*, the latter *hemeralopia*.

**BLI'NDWORM**, a small reptile, called also a *slow-worm*, from the smallness of its eyes and the slowness of its motion.

**BLIS'TER**, a pustule in the skin, filled with serum; in general, any swelling caused by the separation of the outer integument of any substance from that which is underneath.——In medicine, the plaster or application that raises a blister, mostly made of the cantharides, or Spanish flies.

**BLOCK**, a sea term for a pulley, or series of pulleys, mounted in a frame, or shell, which serves to facilitate the passage of the ropes. The *blocks* now used in the navy are made in Portsmouth by means of circular saws and other machinery, of most ingenious construction, by which the several operations from the rough timber to the perfect *block* are performed in the completest manner possible; the whole being worked by means of a steam engine. We have lately seen it asserted, with an air of authoritative veracity, that "the machinery for supplying the royal navy with blocks (which is characterised as 'one of the wonders of the world') is the *invention* of Mr. Brunel." We have no wish to detract from the *real* inventions of this gentleman, whose scientific acquirements are too numerous, and too important, for him to require the aid of borrowed plumage. But we feel ourselves bound to contradict the statement in express terms. Great, and even wonderful, as Mr. Brunel's *improvements* may have been, the merit of *inventing* the block machinery is due to the late Mr. Walter Taylor, of Woodmill, in the parish of South Stoneham, Hants, where his original manufactory of blocks and pumps for the navy for many years existed. And we observe that in an able local work, entitled "Sketches of Hampshire," lately published, the circumstance is thus noticed:—"To the ingenuity of that gentleman (Mr. Taylor) this country is lastingly indebted; for, when the government took into their own hands the manufacture of blocks, and erected the celebrated machinery in Portsmouth dock-yard for that purpose, they availed themselves most advantageously of Mr. Taylor's *prior inventions*. As the sole credit of the conception, as well as of the perfection of that machinery, is very generally, though erroneously, attributed to the fertile genius of Mr. Brunel, it is but just in this place to assert the claim of a late inhabitant of South Stoneham to his fair share of that meed of applause which is too often exclusively offered to the successful engineer who had the good fortune to perfect the design which Mr. Taylor commenced." The block-making machine, as it now exists at Portsmouth dock-yard, unites the action of sixteen different machines in one steam-engine—seven for the shell, and nine for the sheave. Ten men do the work of 110. It makes about 200 sorts and sizes of blocks; viz., 72 sizes of thick blocks, 48 of thin blocks, 10 of clue line ditto, 20 sister blocks, 20 topsail ditto, 24

CLOTH IS PREPARED FOR "BLEACHING" BY KEEPING IT SOME HOURS IN WARM WATER, AND AFTERWARDS BOILING IT IN AN ALKALINE LEY.



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THE "BOGS" IN IRELAND ARE THE REMAINS OF FORESTS, COVERED WITH PEAT.



the crew to their duty; to assist with his mates in the necessary business of the ship, and to relieve the watch when it expires.

BOD'Y, in physics, an extended solid substance, of itself utterly passive and inactive, indifferent either to motion or rest; but capable of any sort of motion, and of all figures and forms. It is a *hard* body when its parts do not easily yield to any stroke or percussion; a *soft* body when it yields to every stroke, and thereby undergoes a change; and an *elastic* body, that changes its form with every stroke, but recovers it again when the impelling force is removed.——BODY, with regard to animals, is used in opposition to soul, in which sense it makes the subject of anatomy, and is that part of the animal composed of bones, muscles, canals, juices, nerves, &c., which, if considered with regard to the various voluntary motions it is capable of performing, is an assemblage of an infinite number of levers, drawn by cords: if considered with regard to the motions of the fluids it contains, it is another assemblage of an infinity of tubes and hydraulic machines; and if considered with regard to the generation of those fluids, it is another infinite assemblage of chemical instruments and vessels, the principal apparatus whereof, in the whole body, is the brain.——In hydrostatics, BODY is distinguished into solid, fluid, dense, rare, specifically heavy, and light. A *solid* body is that whose particles are kept by a certain continuity which preserves them in the same form. A *fluid* body is that in which the particles are not so bound together as to preserve a constant cohesion. A *dense* body is that which within the same space contains a greater mass than another. A *rare* body is that which contains a less mass within the space than others. A body *specifically heavier* is that which with the same volume of matter contains a greater weight. A body *specifically lighter* is that which with the same volume of matter contains a less weight.——In optics, a *luminous body* is that which diffuses a borrowed light. A *pellucid* or *diaphonous* body is that through which the rays of light easily pass. An *opaque* body intercepts the passage of the rays.——BODY, in matters of literature, denotes much the same with system, being a collection of every thing belonging to a particular science or art, disposed in proper order: thus we say, a body of divinity, law, physic, &c.——BODY, in the art of war, a number of forces, horse and foot, united under one commander. The *main body* is that part of an army which occupies the centre between the two wings. The *reserve* is a select body of troops posted by a general out of the first line of action, to answer some especial purpose.

BODIES, REGULAR, the name of five solids, as the tetrahedron, or pyramid, with four triangular faces; the hexahedron, or cube, with six square faces; the octahedron, with eight faces; the dodecahedron, with twelve; and the icosahedron, with twenty faces.

BOIL'ING, or EBULLI'TION, the bubbling up of any fluid. The term is most commonly applied to that bubbling which happens by the application of caloric, though that which ensues on the mixture of an acid and alkali is sometimes also distinguished by the same name. Boiling, in general, is occasioned by the discharge of an elastic fluid through that which is said to boil; and the appearance is the same, whether it is common air, fixed air, or steam, that makes its way through the fluid. The boiling of water is occasioned by the lowermost particles being rarefied into vapour by reason of the vicinity of the bottom of the containing vessel to fire. In consequence of this, being greatly inferior in specific gravity to the surrounding fluid, they ascend with great velocity, and, agitating the body of water in their ascent, give it the tumultuous motion called boiling. Every liquid has a fixed point at which boiling commences, and this is called the *boiling point*. Thus water begins to boil at the temperature of 212°. After a liquid has begun to boil, it will not become hotter, for although a stronger heat makes all liquids boil more rapidly, yet it does not increase their temperature.

BOG, a quagmire covered with grass, but not solid enough to support the weight of the body; in which sense it differs only from marshes or fens, as a part from the whole.

BOLES, are viscid earths, less coherent and more friable than clay, more readily uniting with water, and more freely subsiding from it. They are soft and unctuous to the touch; adhere to the tongue, and by degrees melt in the mouth, impressing a slight sense of astringency. There are a great variety of these earths; and they are sometimes used medicinally.

BOLE'TUS, in botany, a genus of the *cryptogamia fungi* class of plants, growing horizontally, and porous underneath.——BOLE'TIC ACID is an acid made from mushrooms.

BOL'LARDS, large posts set in the ground, on each side of a dock: on docking or undocking ships, large blocks are lashed to them; and through these blocks are reeved the transporting hawsers to be brought to the capstans.

BOLO'GNA STONE is a phosphoric stone, first found at Bologna in Italy. It is a gray soft sulphureous stone, about the size of a large walnut, which shines in the dark after calcination. It is the native sulphate of barytes.

BO'LSTER, a soft pillow for a broken limb.——In farriery, it is the name of those parts of a saddle which are raised upon the bows to receive the rider's thighs.——*Bolster* is also a sea term, for a piece of timber cut and placed for the easement of the cable.

BOLT, among builders, a strong cylindrical iron or other metal pin, used as a fastening for doors and windows. They are generally distinguished into three kinds, viz., plate, round, and spring bolts.——In

THE STEAM FROM BOILING WATER IS NEARLY TRANSPARENT, BUT IT CONDENSES AND APPEARS CLOUDY OR MISTY IN THE AIR.

HARD WATER BY "BOILING" IS FREED FROM ITS EARTHY SALTS AND SUBSTANCES, AND THEREBY BROUGHT NEARLY TO THE STATE OF SOFT.



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ed to Moses, were written upon stone; and Solon's laws upon wooden planks. Tables of wood, box, and ivory, were common among the ancients: when of wood, they were frequently covered with wax, that people might write on them with more ease, or blot out what they had written. The leaves of the palm-tree were afterwards used instead of wooden planks, and the finest and thinnest part of the bark of such trees, as the lime, the ash, the maple, and the elm; from hence comes the word *liber*, which signifies the inner bark of the trees: and as these barks were rolled up, in order to be removed with greater ease, these rolls were called *volumen*, a volume; a name afterwards given to the like rolls of paper or parchment. With regard to the use of books, it is indisputable that they make one of the chief instruments of acquiring knowledge; they are the repositories of the law, and vehicles of learning of every kind; our religion itself is founded on books, and "without them, (says Bartholin) God is silent, justice dormant, physic at a stand, philosophy lame, letters dumb, and all things involved in Cimmerian darkness." Yet, with all the well-merited eulogies that have been bestowed on them, we cannot overlook the fact that many are frivolous, and some pernicious. It will therefore be well to bear in mind the opinion of the learned Selden, who says that the characteristics of a good book are solidity, perspicuity, and brevity.

BOOK'BINDING, a very ingenious art, by which printed sheets are folded, gathered, pressed, sewn together, shielded with mill boards, and covered with leather, which is lettered, and ornamented by the use of leaf gold and gilding tools.

BOOK'-KEEPING, the art of registering mercantile transactions for reference, statement and balance; all of which must be so clearly done, that the true state of every part, and of the whole, may be easily and distinctly known.

BOOM, a sea term, for a long pole to extend the bottoms of particular sails, as the *jib-boom*, and *studding-sail-boom*.——The *boom of a harbour* is a strong iron chain thrown across a harbour, to prevent the entrance of an enemy; and a *fire-boom* is a strong pole thrown out from a ship to prevent the approach of fire-ships, &c.

BOOR, a term applied to the uncivilized peasants of Russia and other countries.

BOO'TES, a northern constellation containing Arcturus, and 50 other stars. It is also known as Charles's Wain.

BORA'CIC ACID, in its native state, exists in several small lakes in Italy, and in certain hot springs, from whose waters it is deposited by natural evaporation. It is also obtained from the mineral called borax, which consists of this acid in conjunction with soda. The acid, when separated, appears in the form of a white, scaly, glittering salt, with hexahedral scales; soft and unctuous to the touch. Its taste is bitterish, with a slight degree of acidity. It is soluble in alcohol, which it causes to burn, when set on fire, with a green flame surrounded with a white one. Boracic acid was discovered by Sir Humphry Davy to be a compound of a peculiar base, which he called *boron*, and oxygen, in the proportion of 8 parts of the former to 16 of the latter. The most important combinations formed by boracic acid is that with soda, commonly called *borax*.

BO'RAX, a native salt found in a fluid form, suspended in certain waters, and discovered in them by its brackish and bitter taste; readily separable from them by evaporation, and appearing, on a nice solution and evaporation, in transparent crystals. It is chiefly found in Thibet, and is imported into England from India. Borax makes no effervescence either with acids or alkalies, and yields nothing by distillation but an insipid phlegm. Its use in soldering gold and other metals, is well known; also in metallurgy, as a flux, in the remelting the small masses of gold and silver that are the produce of assays; for by rubbing it over the vessels these are to be melted in, it fills up all their little cavities, and leaves not the least roughness on the surface, to detain any of the melted metal. It is used by the dyers to give a gloss to silks; and it is also in request both as a cosmetic and a medicine.

BO'RACITE, or BORATE OF MAGNESIA, in chemistry, magnesian earth combined with boracic acid. It is generally of a cubic form, and remarkable for its electrical properties when heated.

BOR'DURE, in heraldry, a cutting off from within the escutcheon all round it about 1-5th of the field, serving as a difference in a coat of arms, to distinguish families of the same name, or persons bearing the same coat.

BO'RING, in mineralogy, a kind of circular cutting, or a method of piercing the earth with scooping irons, which, when drawn out, bring with them samples of the different strata through which they have passed. By this means the veins of ore or coal may be discovered without opening a mine.——Boring for water has of late been very successfully practised. [See *Artesian Wells.*]

BORING MACHINE, in mechanics, an engine used for boring or perfecting the bores of cannon, cylinders for steam-engines, pipes, &c. It is a machine of great power and complexity.

BOR'OUGH. This word originally denoted a fortified city or town; but at present it is given to such town or village as sends burgesses or representatives to parliament. Boroughs are equally such whether they be incorporate or not; there being several boroughs that are not incorporated, and, on the contrary, several corporations that are not boroughs.——BOROUGH ENGLISH, is a customary descent of lands or tenements, in certain parts of England, by which they descend to the youngest instead of the eldest son; or if the owner leaves no son, to the youngest brother. The custom goes with the land, although there be a



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within the seed-vessel, is termed the receptacle of the seeds. *Nectaries* are those parts in a flower which are designed to prepare a sweet nectareous liquor. The tube of the blossom, as in the honey-suckle, frequently answers the purpose; but in many other flowers, there is a peculiar organisation for the purpose. The *receptacle* is the seat or base to which the various divisions of a flower are affixed. Thus, if you pull off the calyx, the blossoms, the stamens, the pistils, and the seeds or seed-vessels, the substance remaining on the top of the stalk is the receptacle.

It will be our business now to describe the ARTIFICIAL classification of plants, or *sexual system of Linnæus*; and difficult as it may be to give a clear view of it in such a summary as the limits of our work afford, it is our intention not to lose sight of its scientific character, while we attempt to render it more intelligible to those who have never made its study an object of their attention. Linnæus has laid it down as a fundamental law of botany, that the sexual parts of plants are most intimately related to the growth of the fruit, and that they are therefore of the greatest importance; in short, that no other system of classification could possibly introduce order into a branch of natural history, teeming, as this does, with almost endless diversities. He accordingly divided all known plants into twenty-four classes, distinguishing them according to the number or situation of the stamens, filaments, anthers, or male and female flowers in each plant, as follows:—

1. *Monandria*, plants having one stamen.
2. *Diandria* . . . . . two stamens.
3. *Triandria* . . . . . three stamens.
4. *Tetrandria* . . . . . four stamens.
5. *Pentandria* . . . . . five stamens.
6. *Hexandria* . . . . . six stamens.
7. *Heptandria* . . . . . seven stamens.
8. *Octandria* . . . . . eight stamens.
9. *Enneandria* . . . . . nine stamens.
10. *Decandria* . . . . . ten stamens.
11. *Dodecandria*, from eleven to seventeen stamens.
12. *Icosandria*, many stamens inserted in the calyx. [wards.
13. *Polyandria*, twenty stamens and up-
14. *Didynamia*, four stamens in one flower, two longer than the rest.
15. *Tetradynamia*, six stamens, two shorter than the rest.
16. *Monadelphia*, the filaments connected in the form of a tube. [tubes.
17. *Diadelphia*, the filaments forming two
18. *Polyadelphia*, the filaments forming several parcels. [tube.
19. *Syngenesia*, the anthers formed into a
20. *Gynandria*, the stamens standing in the style.
21. *Monœcia*, stamens and pistils in separate flowers, but in one plant. [plants.
22. *Diœcia*, stamens and pistils in separate
23. *Polygamia*, stamens and pistils separate in some flowers, and united in others.
24. *Cryptogamia*, flowers inconspicuous, or invisible to the naked eye.

In this last class are comprehended the ferns *(filices)*; mosses *(musci)*; sea-weeds *(algæ)*; and the different kinds of *fungi*.

The *Orders*, or subdivisions of the classes, from class 1 to 13 inclusive, are marked by the number of styles or pistils in each plant; as *monogynia*, where there is but one pistil; and *digynia*, *trigynia*, *tetragynia*, &c. for two, three, four, or more pistils. When the seeds are naked, the term *gymnospermia* denotes the order: when contained in a pericarp, *angiospermia*; when the seeds are contained in a silique of different sizes, they are termed *siliculosa* and *siliquosa*. In most of the other classes the orders are marked by the number of stamens in each plant, except *syngenesia*, in which the orders *polygamia æqualis*, *polygamia superflua*, *polygamia frustanea*, *polygamia necessaria*, and *polygamia segregata* mark the connexion of the flower. The next division is into *Genera* or families, each genus uniting together all those plants which bear so strong an affinity as to be considered members of the same family. The name given to the genus is the name by which all the plants of that family are known: thus, the genus *rosa* includes all the different kinds of roses; *salix* (which is the scientific name for willow), every kind of willow; *convolvulus*, every kind of bind-weed; and *erica*, all the heaths. The distinctive or characteristic marks upon which the genera are founded, are always taken from the shape, position, number, or some other property of the different parts of the flower, as the calyx, petals, seeds, seed-vessels, &c., whether they be round or heart-shaped; whole or divided; rough or smooth; single or many: and the like. There is only one more division, viz. the *Species*. Each genus is divided into species, the characteristic marks of which are formed upon the leaves, stems, roots, or any other parts of the plant except the flower; and some name, called the specific or trivial name, is given to each species, thus characterised, which, added to the name of the genus, sufficiently distinguishes each particular plant. To elucidate this we will quote the words of a botanical essayist—"Suppose that you have found, and brought home from your walk, a delicate, blue, bell-shaped flower, called by some bell-flower, by others Canterbury-bell, and by others again blue-bell. You naturally wish to know by what name this plant is distinguished by the botanist, what name all scientific men in every country have agreed to give it, that you may be at no loss under what name to look for a description of it, or how to communicate to others any observations you may have made upon this plant yourself. In the first place, then, examine how many stamina, or how many of those small bodies called its anthers, are to be found in the bell-shaped corolla, or blossom; you discover five; now run over the classes of Linnæus, till you come to that, which is distinguished by its five stamina: this is called *pentandria*, and you therefore know your flower to be in this class. Next look for the pistillum or



WHEN A TREE BEGINS TO DECAY IN THE CENTRAL PART OF THE WOOD, THE TOP BRANCHES ARE OBSERVED TO WITHER.

THE AGE OF A TREE IS KNOWN BY THE CIRCULAR LAYERS OR RINGS IN THE WOOD, ONE RING BEING FORMED EVERY YEAR.

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A FEW DROPS OF AQUA AMMONIA IN A BOTTLE OF NEW BRANDY WILL GIVE IT ALL THE QUALITIES OF THAT OF THE OLDEST DATE.

BRANDY WILL PREVENT INFERIOR WINE FROM SPOILING, BUT IT TENDS TO DESTROY WHAT VINOUS FLAVOUR IT BEFORE POSSESSED.

BO'WLDER, or BO'WLDER-STONE, a roundish stone found on the sea-shore, or in the channels of rivers, &c., worn smooth by the action of water.——In geology, the term *bowlder* is used for rounded masses of any rock, transported from their original bed by water. Large bowlders of granite are very common on the surface of the most recent formations.

BO'WLDER-WALL, a wall, generally on the sea-coast, constructed of large pebbles or bowlders of flint, which have been rounded by the action of water.

BOWLS, a game played upon a fine smooth grassy surface, used solely for the purpose, and denominated a bowling-green.

BOX'ERS, a kind of athletæ, who combat or contend for victory with their fists. Among the Romans they were called *pugiles*; hence the appellation of *pugilists* to the boxers of the present day.

BRACE, in architecture, a piece of timber framed in with bevel joints, to keep the building from swerving either way. When the brace is framed into the principal rafters, it is sometimes called a *strut*.——Braces, in marine language, are ropes belonging to all the yards of a ship, except the mizen, two to each yard, reeved through blocks that are fastened to pennants attached to the yard arms.——*To brace about*, is to turn the yards round for the contrary tack.——*To brace to*, is to check or ease off the lee braces, and round-in the weather ones, to assist in tacking.

BRA'CHIAL, in a general sense, denotes something belonging to the arm; as, the *brachial artery*.——Brachia'lis is particularly used for a thick and broad muscle of the arm, lying between the shoulder-bone and the elbow.

BRA'CHIATE, an epithet for having branches in pairs, all nearly horizontal, and each pair at right angles with the next.

BRACHYG'RAPHY, stenography, or the art of writing in short hand.

BRACHYL'OGY, in rhetoric, the method of expressing anything in the most concise manner.

BRACHYPNÆ'A, in medicine, short respiration at small intervals.

BRA'CTEA, or BRACTE, in botany, a floral leaf, one of the seven fulcrums or props of plants. It differs from other leaves in shape and colour, and is generally situated on the peduncle, so near the corolla, as easily to be mistaken for the calyx.

BRA'CTEOLATE, in botany, an epithet for plants which are furnished with bracteoles, or little bractea.

BRAH'MINS, or BRAM'INS, the caste or hereditary division of Hindoos peculiarly devoted to religion and religious science, in the same manner as, among the Jews, the priesthood was ordained to continue in the tribe of Levi. The families of this caste claim peculiar veneration from the rest, and seem, in their name of *brahmins*, to claim the merit of being the more immediate followers of Brahma, their incarnate deity. Some of them, however, are described as very corrupt in their morals; while others live sequestered from the world, devoted to superstition and indolence. To the brahmins we are indebted for whatever we know of the Sanscrit, or ancient language of the country, in which their sacred books are written.

BRAIN, in anatomy, that soft white mass enclosed in the cranium or skull, in which all the organs of sense terminate, and the intelligent principle of man is supposed to reside. It consists of two principal parts, connected by delicate veins and fibres; and is divided above into a right and left hemisphere, and below into six lobes. The external portion of the brain is soft and vascular, and is called the *cortical* substance; the internal is called the *medullary*. Between the skull and the brain there are three membranes; the outer one called the *dura mater*, which is strong, dense, and elastic; the next is the *tunica arachnoidea*, which is thin and nearly transparent; and an inner one, called the *pia mater*, which is very vascular, and covers the whole surface of the brain. It is worthy of observation, that every part of the brain is exactly symmetrical with the part opposite, and that irregularities in its structure are far more uncommon than in the other parts of the human body.

BRAN, the skins or husks of grain, especially wheat ground, separated from the flour by a sieve or boulter.

BRANCH, a shoot from the main bough of a tree. Also several things similar in figure, as the antlers or shoots of a stag's horn; the branches of veins, branches of a river, &c.

BRANCH'IÆ, in ichthyology, are the gills, or organs of respiration answering to the lungs in other animals, with which all fishes are provided, except the cetaceous tribe and the lamprey. They are eight in number, and serve the fish to take in and throw out water with the air.

BRANCHIOSTE'GIOUS, an epithet for an order of fishes in the Linnæan system, including such as have gills without bony rays, as the pipe fish, sucker, frog fish, &c.

BRAN'DY, a spirituous and inflammable liquor, extracted from wine and other liquors by distillation. The wine-brandy, made in France, is esteemed the best in Europe. It is made wherever wine is made, and pricked wine is used for this purpose, rather than good wine. The chief brandies for foreign trade, and those accounted best, are the brandies of Bourdeaux, Rochelle, Cognac, Blasois, Poictou, Touraine, Anjou, Nantes, Burgundy, and Champagne. As we hear so much of the good qualities of *British* brandy, and have never been so fortunate as to discover them, perhaps it may not be amiss to give a recipe from Dr. Ure. He says, "the following formula may be proposed for converting a silent or flavourless corn spirit, into a factitious brandy. Dilute the pure alcohol to the proof pitch, add to every hundred pounds weight of it from half a pound to a pound of argol (crude winestone) dissolved in water, a little acetic ether, and French wine vinegar,



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THE BONES OF FISHES, BEING GROUND, ARE MIXED UP WITH FARINACEOUS SUBSTANCES, AND USED AS BREAD BY MANY NORTHERN NATIONS.

of the wheat crops in England has since that time been more than trebled; barley is no longer used, except in the distilleries and in brewing; the use of oats as bread is limited even in Scotland and Ireland; and the consumption of rye bread is very inconsiderable. The process of making bread is nearly the same throughout Europe, though the materials of which it is composed vary with the farinaceous productions of different climates and soils. The French, who particularly excel in the art of baking, have a great many different kinds of bread, from the *pain bis*, which is the coarsest of all, to the *pain mollet*, or soft bread, made of the purest flour, without any admixture. In this country we have fewer varieties of bread, and these differ chiefly in their degrees of purity. Our white or fine bread is made of the purest flour; our wheaten bread of flour, with a mixture of the finest bran; and our household bread, of the whole substance of the grain, without the separation either of the fine flour or coarse bran. Like the French, we have also many sorts of small bread, in which butter, milk, and eggs are incorporated; but our Gallic neighbours have a greater variety. "The object of baking is to combine the gluten and starch of the flour into one homogeneous substance, and to excite such a vinous fermentative action, by means of its saccharine matter, as shall disengage abundance of carbonic acid gas in it for making an agreeable, soft, succulent, spongy, and easily digestible bread. The two evils to be avoided in baking are, hardness on the one hand, and pastiness on the other."——The *Adulteration of Bread*, by means of alum, has long been a prolific source of evil, inasmuch as the health of the public, and of children especially, is often seriously injured by it. It is, however, fortunate, that to discover this pernicious practice no chemical skill is required: on macerating a small piece of the crumb of new-baked bread in cold water, sufficient to dissolve it, the taste of the latter, if alum has been used by the baker, will acquire a sweetish astringency. Another method of detecting this adulteration consists in thrusting a heated knife into a loaf before it has grown cold; and if it be free from that ingredient, scarce any alteration will be visible on the blade; but, in the contrary case, its surface, after being allowed to cool, will appear slightly covered with an aluminous incrustation. Dr. Ure's directions for discovering the presence of alum in bread are given in the following words:—"When alum is present in bread it may be detected by treating the bread with distilled water, filtering the water first through calico, and next through filtering paper, till it becomes clear; then dividing it into two portions, and into the one pouring a few drops of nitrate or muriate of baryte, and into the other a few drops of water of ammonia. In the former a heavy white precipitate indicating sulphuric acid will appear, and in the latter a light precipitate of alumina, redissoluble by a few drops of solution of caustic potash." He further says, "When chalk or Paris plaster is used to sophisticate flour, they may be best detected by incinerating the bread made of it, and examining the ashes with nitric acid, which will dissolve the chalk with effervescence, and the Paris plaster without. In both cases the calcareous matter may be demonstrated in the solution, by oxalic acid, or better by oxalate of ammonia." That there has been much reason to complain of the adulteration of bread, particularly in times of scarcity, or whenever the high price of this grand necessary of life has stimulated the cupidity of fraudulent dealers, there can be no doubt; but we are inclined to believe that the practice, to any injurious extent, is much less prevalent than the public suspect. The subject, however, is too important to be overlooked, and the foregoing tests are at least worthy of insertion.

WHATEVER GRAIN IS USED FOR BREAD, WHETHER WHEAT, BARLEY, OATS, RYE, OR MAIZE, HAS THE NAME OF "BREAD-CORN."

BREAD'-FRUIT-TREE (*artocarpus incisa*). It appears to have been first discovered to Europeans by the great navigator Dampier, and is indigenous in Otaheite and other islands of the South Sea. The tree is said to be of the size of a large apple tree; the leaves broad, and of a dark green. The fruit is appended to the boughs in the manner of apples, and of about the size of a pound of bread, inclosed with a tough rind, which, when ripe, turns of a yellow colour. The internal part is yellow, soft, and sweet. The natives bake it in an oven till the rind is black; and this being scraped off, they eat the inside, which is then white, resembling new-baked bread, having neither seed nor stone. Some of the trees have been planted in Jamaica, and other West India islands, where it is used as a delicacy; and w. other employed as bread, or in the form of pudding, it is considered highly palatable. But in Otaheite the bread-fruit-tree not only supplies food, but clothing, and numerous other conveniences of life. The inner bark, consisting of a white fibrous substance, is formed into a kind of cloth; and the wood is used for the building of boats and houses.

BREAK'ERS, billows which break violently over rocks lying under the surface of the sea, exhibiting a white foam, and being distinguished by a peculiar hoarse roaring, very different from that of waves in deep water.

BREAKING GROUND, a military term, for opening the trenches and beginning the works for a siege.

BREAK'WATER, the hull of a vessel sunk at the entrance of a harbour, or any erection of wood or stone placed there to break the force of the water, such as the Breakwater erected in Plymouth Sound.

BREAST'PLATE, a piece of defensive armour worn on the breast, which formerly was deemed of great importance, but in modern warfare has fallen much into disuse.——In horsemanship, a leathern strap running from one side of the saddle, across the horse's breast, to the other, to keep it in its place.

BREAST-PLOUGH, a sort of plough



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as to have lasted for several thousand years.

BRI'DEGROOM, and BRIDE, the names given to a newly married man and woman. But these terms are applied to them at the marriage festival, before they are married, as well as after the ceremony; and the true meaning is, a man and woman espoused or contracted to be married. The word bridegroom was formerly written *bridegoom*, the last syllable being derived from the Saxon *guma*, a man. *Groom* is a Persian word, signifying one who has the care of horses: hence it appears, that by an error of pronunciation we have been led into this ridiculous corruption of the original word! Among the Greeks it was customary for the bride to be conducted from her father's house to her husband's in a chariot, the evening being chosen for that purpose, to conceal her blushes: she was placed in the middle, her husband sitting on one side, and one of her most intimate friends on the other: torches were carried before her, and she was entertained in the passage with a song suitable to the occasion. When they arrived at their journey's end, the axle-tree of the chariot they rode in was burnt, to signify that the bride was never to return to her father's house. Among the Romans, when a bride was carried home to her husband's house, she was not to touch the threshold at her first entrance, but was to leap over it.

BRIDGE, any structure of wood, stone, brick, or iron, raised over a river, or canal; its strength depending on its own form, its unyielding materials, and the permanence of the abutments. Among the bridges of antiquity, that built by Trajan over the Danube is allowed to be the most magnificent; it was composed of twenty arches, of a hundred and fifty feet in height, and their opening from one pier to another was a hundred and sixty feet: the piers of this fine bridge are still to be seen on the Danube, being erected between Servia and Moldavia, a little above Nicopolis. In Great Britain, the art of building bridges appears to have been diligently studied from early times. The most ancient bridge in England is the Gothic triangular bridge at Croyland in Lincolnshire, said to have been built in 860; but the ascent is so steep that none but foot-passengers can go over it. The longest bridge in England is that over the Trent, at Burton in Staffordshire, built in the 12th century. It consists of thirty-four arches, and is 1545 feet long. Old London Bridge was commenced in 1176, and was encumbered with houses for a long period: they were, however, removed in 1758. Among the great architectural works of our own times are Waterloo and New London bridges. The former consists of nine elliptical arches of 120 feet span each, is 1250 feet long, and has a flat surface in its whole course. The latter, which was commenced in 1824, and finished in 1831, consists of five elliptical arches, the centre one being 152 feet span, and the least of them being larger than any stone arch of this description ever before erected. This magnificent structure, which was built after a design of the late John Rennie, contains about 120,000 tons of granite, measures 982 feet from the extremities of the abutments, with 53 feet of roadway between the parapets, and cost about two millions sterling. There are several cast-iron bridges in England, the chief of which is Southwark-bridge, over the Thames: it consists of three arches, and is the finest iron bridge in the world.——*Suspension Bridges.* Although pendent or hanging bridges have by some persons been deemed a modern invention, we find that the use of them is of great antiquity in mountainous countries; though the scientific principles which distinguish those of recent construction may perhaps be sought in vain among them. The most remarkable bridge of suspension in existence is allowed to be that built by Mr. Telford over the Menai strait, between the isle of Anglesea and Caernarvonshire in Wales, which was finished in 1825. Others also, most elegant in their design, and fully answering all that can possibly be expected from them, have been recently erected; viz. over the Thames at Hammersmith, at Shoreham, and at various other places. In these the flooring or main body of the bridge is supported on strong iron chains or rods, hanging in the form of an inverted arch, from one point of support to another. The points of support are the tops of strong pillars or small towers, erected for the purpose. Over these pillars the chain passes, and is attached, at each extremity of the bridge, to rocks or massive frames of iron, firmly secured under ground. The great advantage of suspension bridges consists in their stability of equilibrium, in consequence of which a smaller amount of materials is necessary for their construction than for any other bridge. If a suspension bridge be shaken, or thrown out of equilibrium, it returns by its weight to its proper place, whereas the reverse happens in bridges which are built above the level of their supporters.——*A draw-bridge*, is one that is fastened with hinges at one end only, so that the other may be drawn up; in which case, the bridge stands upright, to prevent an enemy from passing the moat.——A *bridge of communication* is that made over a river, by which two armies, or forts, which are separated by that river, have a free communication with one another.——A *floating bridge* is a sort of redoubt, consisting of two boats, covered with planks, which are solidly framed, so as to bear either horse or cannon.——A *bridge of boats* consists of a number of common boats joined parallel to each other at the distance of six feet, till they reach across a river. They are then covered with planks, so as to serve as a passage for men and horses. We may here observe, in conclusion, that in military operations, temporary bridges are often formed in this and various other ways, by laying planks upon boats, pontoons, or such other buoyant supporters as readily present themselves.

THE EARLIEST WOODEN BRIDGE THERE IS ON RECORD, IS THAT THROWN BY JULIUS CAESAR OVER THE RHINE, AND DESCRIBED IN HIS COMMENTARIES.

THE MENAI BRIDGE IS 560 FEET BETWEEN THE POINTS OF SUSPENSION, WEIGHS 485 TONS, AND THE ROADWAY IS 100 FEET ABOVE HIGH WATER.



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which becomes a short roundish swelling pod, containing a kidney-shaped seed in each. It is used by dyers to give a yellow colour.

BROWN'ISTS, in church history, a religious sect, which sprung up in England towards the end of the 16th century, and long known under the denomination of *Independents*. Their leader was one Robert Brown, born at Northampton, yet his name was not adopted by them, but rather given to them by their adversaries as a nickname. They equally disliked episcopacy and presbyterianism. They condemned the solemn celebration of marriages in churches, maintaining, that matrimony being a political contract, the confirmation of it ought to proceed from the civil magistrate; an opinion in which they are by no means singular, as may be adduced from the late enactments of our legislature on this subject. They also rejected all forms of prayer, and held, that the Lord's prayer was not to be recited as a prayer; being given only as a model upon which to found our supplications. Any lay brother was allowed the liberty of giving a word of exhortation to the people, and after the sermon to reason upon the doctrines that had been preached. In a word, every church on their model is a body corporate, being accountable to no class, synod, convocation, or other jurisdiction whatever. During Elizabeth's reign the laws were enforced against them with great severity, and accordingly many retired and settled at Amsterdam, where their church flourished nearly a century.

BRU'MAL, the winter quarter of the year, beginning at the shortest day.

BRU'TÆ, the second order of animals of the *Mammalia* class, who have no fore-teeth in either jaw; consisting of nine genera, the principal of which are the sloth, rhinoceros, elephant, &c.

BRUMA'LIA, in antiquity, a festival celebrated by the Romans in honour of Bacchus twice a-year; viz., on the twelfth of the calends of March, and the eighth of the calends of December.

BRUNFEL'SIA, in botany, a genus of shrubby plants, native of the East Indies, named by Plumier after Brunfelsius, a German monk and physician: class 14 *Didynamia*, order 2 *Angiospermia*.

BRU'NIA, in botany, a genus of plants named after Cornelius Brun, a traveller, class 5 *Pentandria*, order 1 *Monogynia*. There are various species which are all shrubs, and natives of Ethiopia.

BRUXANEL'LI, a Malabar tree, the bark of which is diuretic.

BRUTE, an animal without the use of reason, or that acts by mere instinct, in which sense it denotes much the same with beast, and comprehends all animals excepting mankind. Philosophers, however, are far from being agreed on this subject; some making brutes mere machines, whilst others allow them not only reason, but immortality. Others take a middle course, and allow brutes to have imagination, memory, and passion; but deny that they have understanding or reason, at least, in any degree comparable to that of mankind. The sagacity of many brutes is indeed admirable; yet what a prodigious difference is there between that sagacity and the reason of mankind!

BRY'ONY, in botany, a genus of the *monœcia-syngenesia* class of plants; the flower of which consists of a single petal, divided into five deep segments; and the fruit is a roundish berry, containing a few seeds. The root of the rough or white bryony is a strong irritating cathartic.

BUB'BLE, a bladder in water, or a vesicle filled with air.——BUBBLE, in commerce, a term given to any delusive scheme or project for raising money on imaginary or false pretences; as the famous "South Sea bubble," [which see] and hundreds since.

BU'BO, in medicine, the name of any tumour in the lymphatic glands, particularly in the groin or axilla.

BU'BONOCELE, in medicine, the inguinal hernia, or rupture of the groin, formed by a prolapsus of the intestines or omentum.

BUCANIER', or BUCCANEER', a name given to those piratical adventurers, chiefly English and French, who, in the seventeenth century, committed the most excessive depredations upon the Spaniards in America. The name had been given to the first French settlers on the island of St. Domingo, whose sole employment consisted in hunting bulls or wild boars, in order to sell their hides and flesh; and as they smoked and dried the flesh of the animals according to the manner of the Indians, which was called *buccaneering*, they thus obtained the name of buccaneers.

BUCA'O, in ornithology, a species of owl, in the Phillipine isles, of a beautiful plumage, and size of a peacock, but remarkable for its hideous scream.

BUCAR'DIA, in mineralogy, a stone shaped like the heart of an ox.

BUC'CANAL-GLANDS, in anatomy, the small glands of the mouth under the cheek, which assist in secreting the saliva.

BUCCELA'TION, in medicine, a method of stopping an hæmorrage, by applying pieces of lint to the vein or artery.

BUCCELLA'RII, an order of soldiery under the Greek emperors, appointed to guard and distribute the rations of bread.

BUCCI'NA, an ancient musical and military instrument, somewhat similar to the modern trumpet. Hence BUCCINATOR, or trumpeter.

BUC'CINITE, fossil remains or petrifactions of the shells called *buccinum*.

BUCCINA'TOR, in anatomy, a muscle of the cheek, so called from its office of forcing out the breath.

BUC'CULA, in antiquity, that part of the helmet which protected the cheeks.

BUCEN'TAUR, the name of the large vessel which the Venetians formerly used in the ceremony of espousing the sea.

BU'CEROS, the hornbill or Indian raven; a genus of birds of the order *Picæ*; of which there are several species.



THE WEALTH WHICH THE BUCCANEERS ACQUIRED WAS SPENT IN GAMBLING, OR IN THE INDULGENCE OF OTHER CRIMINAL PLEASURES.

RELIGION WAS STRANGELY BLENDED WITH THE VICES OF THE BUCCANEERS, AND THEY ALWAYS BEGAN THEIR ENTERPRISES WITH A PRAYER.

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as in the tulip; *tunicated*, when formed of multitudes of coats, surrounding one another, as in the onion; *squamose*, or *scaly*, when composed of lesser flakes, as in the lily; *duplicate*, when there are only two to each plant; and *aggregate*, when there is a congeries of such roots to each plant.

BULIM'IA, or BU'LIMY, a disease in which the patient is affected with an insatiable and perpetual appetite for food.

BULK'-HEADS, partitions made athwart a ship, by which one part is divided from another; as the great cabin, gun-room, bread-room, &c.

BULL, in zoology, the male of the bovine genus of quadrupeds, of which cow is the female.——In astronomy, the constellation Taurus.——Also, an edict or mandate issued by the Pope, and sealed with the bulla, a leaden or gold seal.

BUL'LA, in antiquity, a small round ornament of gold or silver, worn about the neck or breast of the children of the nobility till the age of fourteen.——In conchology, a genus of testaceous animals, class *vermes*, order *testacea*.

BUL'LATE, in botany, an epithet for a leaf; *folium bullatum*, a leaf having protuberances on its surface resembling blisters.

BULL'-DOG, a dog of English breed, so called from his property of attacking the bull, whence he was formerly used in the cruel sport of bull-baiting.

BULL'ET, a leaden ball with which small fire arms are loaded.

BULL'ETIN, an official account of public transactions or matters of general interest.

BULL'-FIGHT, an entertainment formerly frequent in Spain and Portugal, at which wild bulls are encountered by men on horseback, armed with lances.

BULL'-FROG, a remarkable species of the frog in North America, so called because its voice resembles the distant lowing of an ox.

BULL'ITE, in conchology, a petrified shell, or the fossil remains of shells, of the genus *bulla*.

BULL'ION, uncoined gold or silver in the mass. Those metals are called so, either when smelted from the native ore, and not perfectly refined; or when they are perfectly refined, but melted down in bars or ingots, or in any unwrought body, of any degree of fineness.

BULL'S-EYE, a mark in the centre of a target, in the shape of a bull's eye, at which archers shoot by way of exercise.——In astronomy, Aldebaran, a star of the first magnitude in the constellation Taurus.——Among seamen, a small obscure cloud, ruddy in the middle, generally the immediate forerunner of a great storm at sea.——It is also the name given to the patent reflectors set into the posts or decks.

BUL'WARK, in fortification, a mound of earth capable of resisting cannon shot, and formed with bastions, curtains, &c.——The word is also used figuratively, as "the British navy is the nation's bulwark."

BUM'-BOAT, a sort of wherry used about harbours, to carry provisions, &c., for sale to ships lying at a distance.

BUNGALOW', an Indian name for a house with a thatched roof such as is peculiar to the country.

BUNT, a sea term, the middle part of a sail formed into a sort of bag, or hollow, that the sail may gather more wind.

BUNTINE, or BUNTING, the thin woollen stuff of which the colours, or flags and signals, of ships are made.

BUNTING, in ornithology, a bird of the genus *emberiza*, remarkable for the shape of its bill, the sides of the upper mandible forming a sharp angle bending inwards towards the lower.

BUNTLINES, small ropes fastened to cringles, which serve to force up the bunt of the sail for the better furling it up.

BUOY, a short piece of wood or close hooped barrel fastened by a rope to the anchor, to point out its situation. It is also a piece of wood or cork fastened by a chain, serving to point out dangerous places.——A *Life-buoy* is intended to keep a person afloat till he can be taken from the water. It should be suspended from the stern of the ship, and let go as soon as anybody falls overboard, and a light may be attached to it if the accident happens by night. It consists of two hollow copper vessels connected together, each about as large as an ordinary sized pillow, and of buoyancy and capacity sufficient to support one man standing upon them.

BU'PHAGA, or BEEF-EATER, in ornithology, a bird of the order *pica*, found in Africa. It is so called, because it alights on the backs of cattle, and picks holes in them to get at the larvæ of the gad-fly, on which it lives.

BUPHTHAL'MUM, or OX-EYE, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. There are many species, and are all either annuals or shrubs. It takes its name from the resemblance which its flowers have to the eye of an ox.

BUPHTHAL'MUS, in medicine, a diseased enlargement of the eye.

BUPRES'TIS, in entomology, an insect of the coleopterous order, remarkable for the brilliancy of its colours, which emulate the polish of the finest metals; but it bites severely and has a nauseous scent.

BUR'DEN, the contents of a ship; or the number of tons which a vessel will carry.——*The burden of a song* is that part which is repeated at every verse or stanza.

BUREAU', in its primary sense is a cloth covering a table; next a writing-table; and afterwards used to signify the chamber of an officer of government, and the body of subordinate officers who labour under the direction of a chief. According to the parliamentary usage of France, the chamber of deputies is divided into nine bureaus, composed of an equal number of deputies designated by lot: and each bureau discusses all matters referred to it by the chamber separately.

BUR'GAGE, an ancient tenure in bo-



BULL-DOGS ARE MORE VICIOUS AND FEROCIOUS THAN ANY OF THE CANINE SPECIES, AND BITE ON THE SLIGHTEST PROVOCATION.

THE TERM "BUREAUCRACY" IS OFTEN APPLIED TO THOSE GOVERNMENTS IN WHICH THE BUSINESS OF ADMINISTRATION IS CONDUCTED BY "BUREAUX."

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GILT BUTTONS ARE STAMPED OUT FROM COPPER, ALLOYED WITH ZINC.



caterpillar form, in which it emerges from the eggs laid by a former generation: the grub then passes into an insensible state, called the chrysalis or aurelia, in which it continues some weeks or months, having neither legs, wings, nor motion: at length the case is burst, and moths and butterflies emerge, which pass a short and fluttering existence, during which they lay eggs for future successions of the same kind.

BUTTER-MILK, a kind of serum that remains behind, after the butter is made.

BUTTER-WORT, in botany, the English name of a distinct genus of plants, called *pinguicula*.

BUTTERY, a room in the houses of noblemen and gentlemen, belonging to the butler, where he keeps the utensils belonging to his office.

BUTTOCK *of a ship*, is that part of her, which is her breadth right a-stern, from the tack upwards; and a ship is said to have a broad or a narrow buttock, according as she is built, broad or narrow at the transom.

BUTTONS. The manufacture of buttons is an art which gives employment to numerous persons, and constitutes many distinct trades. The most durable and ornamental buttons are made of various metals, generally polished, or covered with an exceedingly thin wash of some more valuable metal, as gold, silver, or tin. Horn, leather, bone, and wood are also used for buttons, which are sometimes plain, but more frequently covered with silk, mohair, thread, or other ornamental materials. It is impossible, consistent with our limits, to describe the processes by which the various kinds of buttons are made: and it must suffice to state that there is no kind of manufacture whatever in which greater ingenuity is exercised, nor in which the labours of the artisan have been crowned with more complete success.

BUX'US, the box-tree, of which there are three species: 1. the *arborescens*, with oval leaves; 2. the *angustifolio*, with narrow leaves; 3. the *suffruticosa*, commonly used for bordering of flower-beds. The two first sorts, when suffered to grow in a natural manner, are deciduous shrubs of a very elegant figure. There were formerly large trees of these kinds upon Boxhill, near Dorking in Surry. Boxwood is extremely hard and smooth, and therefore capable of being wrought with great neatness by the turner. It is used for the same reasons by engravers on wood.

BU'ZE, a wooden or leaden pipe to convey the air into mines.

BY'-LAWS, or BY'E-LAWS, private and peculiar laws for the good government of a city, court, or other community, made by the general consent of the members. All by-laws are to be reasonable, and for the common benefit, not private advantage of any particular persons, and must be agreeable to the public laws in being.

BUZZARD, a rapacious, but sluggish bird, of the hawk kind.

BYS'SOLITE, a scarce mineral, occuring in very delicate filaments, short, flexible, and elastic. The colour is olive green, and their lustre rather silky.

BYS'SUS, in botany, a genus of mosses, consisting of plain, simple, capillary filaments. The byssi are nearly allied to the conferræ; from which, however, they differ, as consisting of finer, shorter, and more tender filaments, and not growing in water, as the conferræ do.——Byssus, a fine linen among the ancients, procured from India. Also, that fine Egyptian linen, whereof the tunics of the Jewish priests were made.

BYZAN'TINE, a gold coin of the value of 15*l.* so called from being coined at Byzantium. Also an epithet for any thing pertaining to Byzantium, an ancient city of Thrace, situated on the Bosphorus.

# C.

C, the third letter, and second consonant of the alphabet, is pronounced like *k* before the vowels *a*, *o*, and *u*, and like *s* before *e*, *i*, and *y*. Before *h* it has a peculiar sound, as in chance, chalk; in chord and some other words, it is hard like *k*; but in many French words it is soft before *h*, like *s*, as in chaise, chagrin, &c. As a numeral C stands for 100, and CC for 200, &c.; as an abbreviation it stands for Christ, as A.C. Anno Christi, or Ante Christum; also for Companion, as C.B. Companion of the Bath. And in music, C after the cliff, is the mark of common time.

CAA'BA, or CAA'BAH, properly signifies a square building; but is particularly applied by the Mahometans to the temple of Mecca, built, as they pretend, by Abraham, and Ishmaël his son. It is towards this temple they always turn their faces when they pray, in whatever part of the world they happen to be. This temple enjoys the privilege of an asylum for all sorts of criminals; but it is most remarkable for the pilgrimages made to it by the devout Musulmans, who pay so great a veneration to it, that they believe a single sight of its sacred walls, without any particular act of devotion, is as meritorious, in the sight of God, as the most careful discharge of one's duty, for the space of a whole year, in any other temple.

CAA-A'PIA, in botany, the Indian name for the *Dorstenia Brasiliensis* of Linnæus, with which the natives cure the wounds inflicted by poisoned arrows.

BUTTON-SHANKS ARE MADE BY HAND FROM BRASS OR IRON WIRE, WHICH IS LAPPED SPIRALLY ROUND A PIECE OF STEEL BAR.

THE SHANKS OF PLATED BUTTONS ARE SOLDERED ON WITH SILVER SOLDER, AND SEPARATELY HEATED BY MEANS OF A BLOWPIPE.



PLATED BUTTONS ARE STAMPED BY THE FLY-PRESS, OUT OF COPPER-PLATE.

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said to be distinguished from the other winds by its drawing the clouds to itself.

CÆCIL'IA, in zoology, a genus of animals, class *Amphibia*, order *Serpentes*.

CÆRITES TAB'ULÆ, in antiquity, tables or registers in which the censors entered the names of those citizens, who for any misdemeanour were deprived of their right of voting at an election.

CÆSAR, in Roman antiquity, the family name of the first five Roman emperors, and afterwards adopted as a title by their successors. It was also used, by way of distinction, for the intended or presumptive heir of the empire.

CÆSA'RIANS, in Roman antiquity, officers or ministers of the Roman emperors, who kept an account of their revenues, and took possession in their name of such things as devolved or were confiscated to them.

CÆSU'RA, a figure in prosody, by which a division or separation takes place in a foot that is composed of syllables belonging to different words.

CÆT'ERIS PARIBUS, a term often used by mathematical and physical writers; the words literally signifying *the rest, or other things, being alike or equal*. Thus of a bullet, it may be said, *cæteris paribus*, the heavier it is the greater the range, supposing the length and diameter of the piece and the quantity and strength of the powder be the same.

CAG'UI, a Brazilian monkey, the smallest species of which is not more than six inches long.

CAIRNS, heaps of stones in a conical form, which are frequently to be met with in Scotland and Wales.

CA'ISSON, or CAISSOON', a wooden chest filled with bombs or powder, and laid in the way of an enemy, or buried under some work to blow it up. Also, the frame used in laying the foundations of a bridge.

CA'JEPUT OIL, in medicine, an aromatic oil extracted from an Indian tree; the *Melaleuca Leucadendron* of Linnæus, which grows in the Moluccs islands.

CA'LABASH-TREE, in botany, the *Crescentia* of Linnæus, the fruit of which is enclosed in a cell that serves the natives of the Caribbee islands for a drinking cup, a pot for boiling, and for various other domestic purposes.

CALAMAN'CO, a fine sort of woollen stuff of a fine gloss, and chequered in the warp, so that the checks are seen only upon one side.

CALAMA'RIÆ, the third natural order of plants in the Linnæan system, containing the reeds resembling grasses.

CAL'AMAR, a name of the cuttle-fish.

CAL'AMBAC, aloes-wood, a drug, the produce of a tree growing in China and some of the Indian isles.

CAL'AMBOUR, a species of the aloes-wood, used by cabinet-makers and inlayers.

CALAMIF'EROUS, a botanic term for plants having a long, hollow, knotted stem.

CAL'AMINE, or LA'PIS CALAMINA'RIS, the calamine stone, or oxyde of zinc; a kind of bituminous fossil earth, which, when mixed with copper, produces brass.

CAL'AMUS, a rush or reed used anciently as a pen to write on parchments or papyrus. ——The generic name of an Indian cane, otherwise called *rotang*.——Also, a kind of reed, or sweet-scented cane, used by the Jews as a perfume.

CALAN'DRA, in ornithology, a species of lark of a reddish brown colour.

CALASH', a light open chariot.

CAL'ATHUS, in antiquity, a basket or hamper, made of osiers or reeds, used to put needle-work in, or to hold flowers. Calathus was also a pan for cheese-curds and milk; also the name of a cup for wine used in sacrifices.

CALA'TOR, in antiquity, was a public servant and a freeman, such as a bailiff or crier, to summon courts, synods, and other public assemblies. He also attended on the priests in the sacrifices.

CAL'CAR, a kind of furnace, used in glass works for the calcination of sand and salt of potash.

CALCA'REOUS EARTH, or Lime; as marble, limestone, and gypsum, forming ranges of mountains, and containing marine shells and bones of animals, of which it is supposed to be the concentrated ruins.

CALCA'REOUS SPAR, crystallized native carbonate of lime.

CALCAVEL'LA, a sweet kind of Portuguese wine.

CAL'CEUS, in antiquity, a shoe, or whatever served as a covering for the foot. There were two sorts, the *calcei lunati*, which were worn by the patricians, so called from an ivory crescent with which they were ornamented, and the *calcei mulli*, or red shoes. They came up to the middle of the leg, but only covered the sole of the foot. They at first graced the feet of royalty, but on the abolition of the monarchy they were appropriated to those who had borne a curule office.

CALCIF'EROUS, producing cals or lime.

CALCINA'TION is the chemical process for the reduction of bodies to a pulverizable state, by the action of fire; or, the solution of a mixed body by the means of heat or any corroding substance, as mercury, aquafortis, &c., whereby it is reduced to powder.

CAL'CIUM, the metallic basis of lime.

CALCOG'RAPHY, an engraving after the manner of a drawing in chalk.

CALC'-SINTER, the incrustations of carbonate of lime upon the ground; also, the stalactites attached to the roofs of caverns.

CALC'-TUFF, an alluvial formation of carbonate of lime.

CAL'CULARY, a congeries of stony secretions found in the pulp of a pear and other fruits.

CALCULA'TION, the act of computing several sums by means of addition, subtraction, multiplication, division, &c., or an estimate formed in the mind by comparing the various circumstances which influence its determination.

CALCULATO'RES, accountants among





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Ceres Eleusinia, among the Parrhasians; and another among the Eleans, where the most beautiful man was presented with a complete suit of armour, which he consecrated to Minerva; to whose temple he walked in procession, being accompanied by his friends, who adorned him with ribbons, and crowned him with a garland of myrtle.

CALLO'SUM CORPUS, in anatomy, a medullary prominence in the brain, seen when separating the two lateral parts of the cerebrum.

CAL'LUS, the new growth of osseous matter between the extremities of fractured bones; or any dense, insensible knob or horny substance on the skin.

CALODEN'DRUM, a fine shrub, native of the Cape of Good Hope.

CALO'MEL, in medicine, the submuriate of mercury, a preparation of mercury by sublimation or precipitation.

CALOR'IC, the principle or cause of heat, as distinguished from the sensation.

CALORIM'ETER, an instrument for measuring the heat given out by a body in cooling.

CAL'ORIMOTOR, a galvanic instrument, in which the calorific effects are attended by scarcely any electrical power.

CALO'TE, a sort of skull cap worn by the French cavalry under their caps, as a guard against the blows of the sabre.

CAL'VINISM, the theological tenets of John Calvin, who, in the 16th century, flourished at Geneva, where his doctrines still subsist. The doctrinal parts of this system differ from that of other reformers of Calvin's period, chiefly in what regards the absolute decrees of God, by which, according to this teacher, the future and eternal condition of the human race was predetermined: in other words, Calvin denied the free agency of man, and maintained predestination.

CAL'UMET, a symbolical instrument of great importance among the Indians of America. It is a smoking-pipe, the bowl of which is generally made of a soft red marble, and the tube of a very long reed, ornamented with feathers. This instrument, the use of which bears a great resemblance to the caduceus of the Greeks, is a pledge of peace and good faith. The calumet of war, differently made, is used to proclaim war.

CALX, a kind of fine friable powder which remains of metals, minerals, &c., after they have undergone the violence of fire, and have lost all their humid parts. From being combined with oxygen, metallic calxes are heavier than the metal from which they are produced.

CALYCAN'THEMA, the 17th practical Linnæan order of plants, the corolla and stamina inserted in the calyx.

CALYCIF'LORÆ, the 16th Linnæan natural order of plants; the stamina inserted in the calyx, as the wild olive, &c.

CALY'CIFORM, in botany, an epithet for the involucrum when it has the appearance of a calyx.

CALYCIS'TÆ, an appellation given by Linnæus to those botanists who have classed plants according to the different structure of the calyx or flower-cup.

CAL'YCLE, in botany, a diminutive of calyx, a row of small leaflets placed at the base of the calyx on the outside.

CALYP'TRA, in botany, a thin membranaceous involucrum, or cowl, usually of a conic figure, which covers the parts of fructification. The capsules of most of the mosses have calyptræ.

CALYPTRAN'THES, a genus of plants, class 12 *Icosandria*, order 1 *Monogynia*. The species are shrubs, natives of the East and West Indies.

CA'LYX, in botany, a term for the empalement or flower-cup, or that part of a plant which surrounds and supports the other parts of the flower.

CAMBRIC, a species of fine white linen, made of flax, said to be named from Cambray, in Flanders, where it was first manufactured.

CAM'BER-BEAM, in architecture, a beam cut hollow or archwise in the middle, commonly used in platforms.

CAM'BERED, an epithet for the deck of a ship, the flooring of which is highest in the middle: also when it is defectively so, or what is sometimes called broken-backed.

CAM'EL, in zoology, a genus of quadrupeds, of the order of *pecora*; distinguished from the rest by having no horns. The dromedary or Arabian camel has one hunch on the back, four callous protuberances on the fore legs, and two on the hind legs. The Bactrian camel has two hunches on the back. By the camel's power of sustaining abstinence from drink for many days, and of subsisting on a few coarse shrubs, he is peculiarly fitted for the parched and barren lands of Asia and Africa. The Arabians chiefly subsist on the milk of their camels; and without them they could neither carry on trade, nor travel over their sandy deserts.

CAMEL'LIA, in botany, a genus of the *monadelphia-polyandria* class of plants: the flower consists of five ovated petals, connected vertically at the base; the fruit is a turbinated, lignose, and furrowed capsule; the seeds are numerous and small.

CAM'ELOPARD, or GIRA'FFE. This animal, whose existence was at one time disputed, is a native of several parts of Africa, living in forests, and feeding on the leaves. This animal has two straight horns, without branches, six inches long, covered with hair, truncated at the end and tufted. The shoulders are of such a vast length, as to render the fore-part of the animal much higher than the hind part. The neck is very long, the head slender and elegant, and the colour of the body a dusky white, with large rusty spots. It is mild and inoffensive, and, in cases of danger, has recourse to flight for safety; but when obliged to stand on self-defence, it kicks its adversary.

CAMELOPAR'DALIS, in astronomy, a constellation, consisting of 32 stars, situ-

THE SENSATION OF HEAT BEING OFTEN MISTAKEN FOR THE CAUSE, THE WORD "CALORIC" IS NOW USED TO DENOTE THE LATTER.

A CAMEL'S FOOTSTEP IS PERFECTLY NOISELESS, ITS FEET BEING COMPOSED OF A SOFT ELASTIC SUBSTANCE, AND COVERED WITH HAIR.



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CANDLES INCLINED THIRTY DEGREES FROM THE PERPENDICULAR, REQUIRE NO SNUFFING, AND GIVE A UNIFORM LIGHT.

quisite workmanship. But, with all their skill and labour, modern artists have greatly excelled them in lightness, grace, and utility.

CAN'DIDATE, a person who seeks or aspires to some public office. In the Roman commonwealth, the CANDIDATI were obliged to wear a white robe, during the two years of their soliciting for a place. This garment, according to Plutarch, they wore without any other clothes, that the people might not suspect they concealed money for purchasing votes; and also, that they might the more easily show to the people, the scars of those wounds they had received in fighting for the defence of the commonwealth.

CANDIDATI MILITES, an order of soldiers, among the Romans, who served as the emperor's body-guards, to defend him in battle. They were the tallest and strongest of the whole troops; and were called *candidati*, in consequence of being clothed in white.

CAN'DIL, a measure of capacity in India, by which a ship's burden is estimated as it is by tons in Europe. A candiil is 500 cwt.

CAN'DLE-BERRY-TREE, the MYR'ICA CERIF'ERA, or wax-bearing myrtle; a shrub common in North America, from the berries of which a kind of wax or oil is produced of which candles are made.

CAN'DLEMAS DAY, the festival observed on the second of February, in commemoration of the purification of the Virgin Mary. It is borrowed from the practice of the ancient Christians, who on that day used an abundance of lights both in their churches and processions, in memory, as is supposed, of our Saviour's being on that day declared by Simeon "to be a light to lighten the Gentiles." In imitation of this custom, the Roman Catholics on this day consecrate all the tapers and candles which they use in their churches during the whole year.

CAN'DY, a preparation of sugar made by melting and crystallizing it several times.

CAN'DYTUFT, in botany, the *Iberis*, an annual that is cultivated in gardens, bearing a white or purple flower.

CANEPHO'RÆ, the noble Athenian virgins who carried the baskets at the festival of the Panathenæa of Minerva.

CANEPHO'RIA, in Grecian antiquity, a ceremony which made part of a feast celebrated by the Athenian virgins, on the eve of their marriage day.——CANEPHORIA is also the name of a festival of Bacchus, celebrated particularly by the Athenians, on which the young virgins carried golden baskets full of fruit. The baskets were covered, to conceal the mystery from the uninitiated.

CAN'FARA, a sort of ordeal by fire, as it once existed in this kingdom. The accused carried hot irons in his hands; and if he came off unhurt, he was deemed innocent.

CAN'ICA, a kind of wild cinnamon, resembling the clove in flavour.

CANICULAR DAYS, commonly called dog-days, a certain number of days preceding and ensuing the heliacal rising of the *canicula*, or the dog star, in the morning. The Ethiopians and Egyptians began their year at the rising of the dog star, reckoning to its rise again the next year, which is called the *annus canarius*.

CANINA'NA, in zoology, a species of serpent in America; so called because it may be treated as familiarly as a dog.

CA'NIS, a genus of quadrupeds, class *Mammalia*, order *Feræ*. This genus comprehends animals that differ very essentially from each other in their habits, as the dog, the wolf, the fox, and the jackall. Our observations will only extend to the chief peculiarities of the dog, or *Canis familiaris*. They cultivate the society of men, and are but rarely found wild: they feed on flesh and farinaceous vegetables; they digest bones: they are extremely docile, affectionate, and vigilant in their intercourse with men: they have an aversion to strangers generally, and particularly beggars. They are capable of imitation and instruction, and in many instances seem endowed with a degree of intelligence more allied to human reason than to animal instinct.——CA'NIS, in astronomy, the name of two constellations in the southern hemisphere; namely, Canis Major and Canis Minor.

CAN'KER, a corroding disease which occurs frequently in fruit trees.——Also, a fungous excrescence in the feet of horses.

CAN'NEL-COAL, or CAN'AL-COAL, in mineralogy, the *Bitumen ampelites* of Linnæus; a hard, opaque, inflammable jet-black fossil coal, which burns with a bright white flame, like a candle. It is sufficiently solid to be cut and polished, and is often, like jet, made into trinkets. In the fire it decrepitates and breaks into angular fragments, leaving a strong or sooty residuum.

CAN'NEQUIN, white cotton cloth brought from the East Indies, made in pieces of about eight ells long.

CAN'NON, a piece of ordnance, or a heavy metallic gun for a battery, mounted on a carriage. Guns of this kind are made of iron or brass, and of different sizes, carrying balls from three or four to forty-eight pounds' weight. The explosion being directed by the tube, balls and missiles are carried to great distances with destructive force. In a field of battle they are often drawn by horses on light carriages, and are called field pieces, or flying artillery.

CANOE, (pron. *ca-noo'*) a small boat, made of the trunk of a tree, hollowed out by cutting or burning; and sometimes also of pieces of bark joined together. It is impelled by a paddle instead of an oar; and is used by the uncivilized nations in both hemispheres.

CANON, a law or ordinance of the church. The Canon Law consists of rules drawn from Scripture, from the writings of the ancient fathers, from the ordinances of councils, and the decrees of the pope —— Also a dignitary of the church. Originally,

CANKER IN TREES IS CAUSED BY A SUPERABUNDANCE OF SAP, WHICH FORCES ITS WAY THROUGH THE BARK, AND IS CHECKED BY SUDDEN COLD.



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CAOUCHOUC, or CAOUTCHOUC, (pron. *coo-chook*) improperly called *elastic gum*, and more commonly *India rubber*, is obtained from the milky juice of several plants and trees, particularly from the syringe tree of Cayenne. Its elasticity is such that it can be stretched to a great extent, and its pliancy is increased by heat. From its softness, elasticity, and impermeability to water, it is used in the manufacture of many articles; and since it is easily dissolved by the purified naptha from coal tar, which forms a cheap and effectual solvent, and does not change its properties, the solution has been most extensively employed to give a thin covering to cloth, so as to render it impervious to moisture. It is also used for over-shoes, and when dissolved in oils forms a flexible varnish. Caouchouc is principally obtained from South America, and usually brought to Europe in the form of pear-shaped bottles, which are formed by spreading the juice over a mould of clay, then drying by exposure to the sun, or to the smoke of burning fuel: after which it is ornamented on the outside, and the clay in the inside is moistened with water, and picked out.

CAP, a part of dress made to cover the head. The use of caps and hats is referred to the year 1449, the first seen in Europe, being at the entry of Charles VII. into Rouen: from that time they began to take place of hoods or chaperons.——CAP, in architecture, the uppermost part of any assemblage of principal or subordinate parts.——In ship-building, *cap* is a square piece of timber, placed over the head or upper end of a mast.——In botany, the *pileus*, or top of the fungus, generally shaped like a plate or bonnet.——*Cap of maintenance*, one of the ornaments of state, carried before the kings of England at the coronation. It is of crimson velvet, faced with ermine. It is also frequently met with above the helmet, instead of wreaths, under gentlemen's crests. —— *Cap-a-pie*, (French) from head to foot.

CAPA''CITY, in a general sense, means the power of containing or holding.——In geometry, the solid contents of a body.——In chemistry, that state, quality, or constitution of bodies, by which they absorb and contain, or render latent, any fluid; as the *capacity* of water for caloric.

CAPE, in geography, a promontory or headland projecting into the sea farther than the rest of the coast, as the Cape of Good Hope, Cape St. Vincent, &c.

CA'PER, the bud of the caper-bush, much used for pickling. It grows in many parts of the south of Europe.

CA'PET, the name of the French race of kings, which has given 118 sovereigns to Europe, viz., 36 kings of France, 22 kings of Portugal, 5 of Spain, 11 of Naples and Sicily, 3 of Hungary, 3 emperors of Constantinople, 3 kings of Navarre, 17 dukes of Burgundy, 12 dukes of Brittany, 2 dukes of Lorraine, and 4 dukes of Parma.

CA'PIAS, in law, a writ of two sorts; one before judgment, to take the defendant; the other after, which is called the writ of execution.

CAPI'LLARY, in a general sense, an epithet given to things on account of their extreme fineness, or resemblance to hair. ——*Capillary Ores*, in mineralogy, the same with those otherwise denominated arborescent, or striated.——*Capillary Plants* are such plants as have no main stem, but whose leaves arise from the root, upon pedicles, and produce their seeds on the back of their leaves, as the fern, maidenhair, &c.——*Capillary Tubes*, tubes of hair-like fineness, in which fluids ascend, owing to the pressure of the atmosphere being intercepted within the tube, by its sides, and being complete and unintercepted on the outside of the tube.—*Capillary Vessels*, in anatomy, the smallest and extreme parts of the minutest ramifications of the veins and arteries.

CAPILLA'IRE, a kind of syrup, extracted from maiden-hair.

CAPIL'LAMENT, in botany, a fine filament, like a hair, that grows in the middle of a flower, with a little knob at the top.

CAP'ITAL, in commerce, the fund or stock, in money and goods, of a merchant, manufacturer, &c., or of a trading company. ——*A floating capital* is that which remains after payment is made for all the apparatus and implements of the business.——*Fictitious capital* generally means nothing more or less than excessive credits, which throw the management and disposition of a great deal of property into the hands of persons who are not able to answer for the risks of loss from its bad management, or other causes.—CAPITAL, in architecture, the uppermost part of a column or pilaster, serving as the head or crowning, and placed immediately over the shaft, and under the entablature.——CAPITAL, in geography, the metropolis, or chief city or town of an empire, kingdom, state, or province.

CAPITAL PUNISHMENT. No subject has been more discussed, particularly of late years, than that by which the *right* and the *expediency*, assumed by governments, to inflict the penalty of death for offences against the safety and good order of society, is questioned; nor is there any subject whatever, perhaps, more deserving of the calm and dispassionate examination of philosophers and jurists. It has been ably, and, as we think, justly argued, that when the right of society is once admitted to punish for offences, it seems difficult to assign any limits to the exercise of that right, short of what the exigencies of society require. No government has the right to punish cruelly and wantonly: but still the discretion must be vested somewhere, to say what shall be the degree of punishment to be assigned to a particular offence. That discretion must be, from its nature, justly a part of the legislative power, and to be exercised according to the actual state of society. The very frequency of a crime must often furnish a very strong ground for severe punishment, not only as it furnishes proof that the present punish-



BY THE INDIANS, "CAOUTCHOUC" IS MADE INTO WATER-PROOF BOOTS, WHICH, WHEN SMOKED, HAVE THE APPEARANCE OF LEATHER.

CREDIT GIVEN TO INDUSTRY AND ENTERPRISE PRODUCES CAPITAL, AND CAPITAL IS THE TRUE AND VALID REPRESENTATIVE OF PROPERTY.

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In the capitol also were a temple to Jupiter the guardian, and another to Juno; with the mint; and on the descent of the hill was the temple of Concord. This beautiful edifice contained the most sacred deposits of religion, such as the ancylia, the books of the sybils, &c.

CAPITOLINE GAMES. These were annual games instituted by Camillus, in honour of Jupiter Capitolinus, and in commemoration of the preservation of the capitol from the Gauls. There was also another kind of Capitoline games, instituted by Domitian, and celebrated every five years, at which rewards and crowns were bestowed on the poets, champions, orators, historians, &c.

CAPITULA RURA'LIA, assemblies or chapters held by rural deans and parochial clergy within the precinct of every distinct deanery.

CAPI'TULARY, the body of laws or statutes of a chapter, or of an ecclesiastical council.

CAPITULA'TION, in military affairs, a treaty made between the garrison of a place besieged and the besiegers, for surrendering on certain conditions. The term is also applicable to troops in any situation in which they are compelled to submit to a victorious enemy.

CAPI'TULUM, in antiquity, a transverse beam in the military engines of the ancients, wherein were holes for the strings with which they were set in motion.——In botany, CAPITULUM denotes a mode of inflorescence, when several flowers form a kind of *head* or ball.——In anatomy, it means a small head, or protuberance of a bone received into the concavity of another.

CAPI'VI, a tree of Brazil, the flower of which resembles a rose. It grows to a great height, and yields the *balsam of capivi*.

CAP'NIAS, in mineralogy, a kind of jasper, of a smoky colour.——In botany, a vine which produces part white and part black grapes.

CAPONNIE'RE, in fortification, a covered lodgment placed in the glacis, at the extremity of the counterscarp; and in dry moats, with embrasures or loop-holes through which the soldiers may fire.

CAPOTE, a large great coat, with a hood or cowl, which is sometimes worn by sentinels in bad weather.

CAPPARIS, the CAPER-BUSH, a shrub, the trunk and fruit of which, when pickled, are eaten. It is also used in medicine.

CA'PRA, the GOAT, in zoology, constitutes a genus of quadrupeds, of the order *pecora*, distinguished from the other genera of this order, by their hollow, rough, and erect horns, which bend a little backwards. Of this genus authors enumerate a great many species, as the common goat; the *rupicapra*, or chamois-goat; the *ibex*; the *gazelle*; and several others

CA'PRÆ SALTAN'TES, in meteorology, exhalations or fiery meteors which sometimes appear in the atmosphere, assuming various irregular shapes.

CAPREOLATE, in botany, having tendrils, or filiform spiral claspers, by which plants fasten themselves to other bodies, as in vines, peas, &c.

CAPRE'OLUS, in anatomy, the helix of the ear.——In botany, the clasp or tendril of a vine or other plant.

CAPRIC'CIO, in music, the term for that irregular kind of composition in which the composer, without any restraint, follows the bent of his humour.——CAPRICCIO'SO denotes that the movement before which it is written, is to be played in a free and fantastic style.

CA'PRICORN, in astronomy, a southern constellation, and one of the twelve signs of the zodiac, which the sun enters on the 21st of December. *Tropic of Capricorn*, a small circle of the sphere, parallel to the equinoctial, passing through the beginning of Capricorn or the winter solstice, which is the sun's greatest southern declination, namely 23 degrees and a half.

CAPRIFICATION, a method used in the Levant for ripening the fruit of the domestic fig tree, by means of insects bred in that of the wild fig tree. The caprification of the ancient Greeks and Romans corresponds in every circumstance with what is practised at this day in the Archipelago, and in Italy. These all agree in declaring that the wild fig tree, *caprificus*, never ripened its fruit; but was absolutely necessary for ripening that of the garden or domestic fig tree, over which husbandmen suspend its branches.

CA'PRIOLES, in horsemanship, are those leaps which a horse makes in the same place without advancing, in such a manner that when he is at the height of the leap, he jerks out with his hind legs.

CAP'SICUM, a plant, native of South America, the fruit of which is a pod, and the strongest kind of pepper, known by the name of Cayenne Pepper.

CAP'STAN, in a ship, a strong massy column of timber, of the nature of a windlass, placed behind the mainmast, used for weighing, or raising up anchors, or any other purpose in which great power is required.

CAPSULA, in chemistry, a sort of earthen pan, in which things are put that are to undergo a violent operation by fire.

CAPSULÆ RES ARTERIÆ, in anatomy, the arteries of the renal glands; so called because they are enclosed by a capsule.

CAPSULATED, in botany, enclosed in anything, as a walnut in its green husk.

CAP'SULE, the seed-vessel of a plant; it is composed of several elastic valves, which usually burst open at the points when the seeds are ripe; it differs from a pod, in being roundish and short.

CAPTAIN, in the army, the commander of a company of foot or a troop of horse; and in the naval or merchant service, the commander of a vessel.——A *Captain-lieutenant* is an officer, who, with the rank of captain and pay of lieutenant, commands a company or troop.——A *Post-captain* in the British navy, is an officer commanding any





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wholly deprived of it by boiling.——*Carbonous acid*, is carbon not fully saturated with oxygen.

CAR'BUNCLE, in surgery, an inflammatory tumour, or painful gangrenous boil, which being seated deeply, in parts provided with cellular membrane, does not soon discover its whole dimensions, nor the ill-digested matter it contains——It is also the name of a very beautiful gem, of a deep red or scarlet colour, known to the ancients as the *anthrax*. When held up against the sun, it loses its deep tinge, and becomes exactly of the colour of burning charcoal, whence the propriety of the name they gave it. It has, however, been supposed by some modern mineralogists that the carbuncle of the ancients was garnet. ——Carbuncle, in heraldry, a charge or bearing, consisting of eight radii, four of which make a common cross, and the other four a saltier.

CARBUNCULA'TION, the blasting of the young buds of trees or plants, by excessive heat or cold.

CAR'BURET, in chemistry, a substance formed by the combination of carbon with metals, earth, or alkali.

CAR'BURETTED HY'DROGEN GAS, a substance formed of hydrogen and carbon, which on being duly excited, fires oxygen, and radiates light and heat, as in gas lights, and all other lights. The gas which is known by the name of the *fire-damp* among miners is pure carburetted hydrogen.

CAR'CANET, in archæology, a chain for the neck.

CAR'CASS, the body of a dead animal, especially a brute; that of the human species being called a corpse.——Carcass, in building, the shell or timber work of a house before it is lathed and plastered or the floors laid.——In gunnery, an iron case or hollow vessel, of an oval figure, filled with combustible and other substances, to be thrown from a mortar into a town, to set fire to buildings. It has two or three apertures from which the fire blazes, and the light sometimes serves as a direction in throwing shells. It is furnished with pistol barrels, loaded with powder to the muzzle, which explode as the composition burns down to them.

CARCE'RES, in the ancient Circensian games, were inclosures in the circus, wherein the horses were restrained till the signal was given for starting, when, by an ingenious contrivance they all at once flew open.

CARCINO'MA, in medicine, a cancer; also, a turgescence of the veins of the eye.

CAR'DAMINE, in botany, a genus of plants in the Linnæan system, class 1 *Tetradynamia*, order 2 *Siliquosa*.

CAR'DAMOM, a perennial plant growing in the East Indies. The seeds are of an aromatic and pungent flavour, and are used as a stimulant.

CAR'DIALGY, sometimes called the *cardiac passion*, is the heart-burn, a violent sensation of heat and acrimony in the left orifice of the stomach, seemingly at the heart, but rising into the œsophagus.

CAR'DINAL, which in a general sense signifies principal or pre-eminent, is formed of the Latin word *cardo*, a hinge, agreeably with the common expression, in which it is said of an important matter that every thing *turns* upon it: thus Justice, Prudence, Temperance, and Fortitude are called the four *cardinal virtues*.——The *cardinal signs*, in astronomy, are Aries, Libra, Cancer, and Capricorn.——The *cardinal points* of the compass, north, south, east, and west.—— *Cardinal numbers*, in grammar, are the numbers, one, two, three, &c., which are indeclinable, in opposition to the ordinal numbers, first, second, third, &c.

CAR'DINAL, in the Roman hierarchy, an ecclesiastical prince and subordinate magistrate, who has a voice in the conclave at the election of a pope, and who may be advanced to that dignity himself. The dress of a cardinal is a red soutanne, a rochet, a short purple mantle, and a red hat; and his title of address, "His eminence."

CAR'DINAL-FLOWER, a plant of the genus *Lobelia*, of many species. They are fibrous-rooted perennials, from two to five or six feet high, with erect stalks, ornamented with spear-shaped leaves, and spikes of beautiful monopetalous flowers of scarlet, blue, and violet colours.

CARD'ING-MACHINE, an instrument of modern invention for combing, breaking, and cleansing wool and cotton. It consists of cylinders, thick set with teeth, and put in motion by the force of water, steam, &c.

CAR'DIOID, in mathematics, an algebraic curve, so called from its resemblance to a heart.

CAR'DITE, a fossil or petrified shell, of the genus *cardium*.

CARDS, pieces of pasteboard, of an oblong shape, painted or, rather, printed, of various figures, made into packs of 52 in number, and used by way of amusement in different games. They are divided into four kinds, viz. diamonds, hearts, clubs, and spades, and thirteen of each kind, so that an infinite variety of combinations may be formed with them, and games of chance thereby rendered highly interesting.

CAREEN'ING, in sea language, the bringing a ship to lie down on one side, in order to trim and caulk the other.

CAR'GO, the goods, merchandize, and effects which are laden on board a ship, exclusive of the crew, rigging, ammunition, provisions, guns, &c. The lading within the hold is called the *inboard cargo*, in distinction from horses, cattle, &c., carried on deck.

CAR'GOOSE, a fowl belonging to the genus *Colymbus*, called the Crested Diver.

CAR'IBOO, in zoology, a quadruped of the stag kind.

CAR'ICA, in botany, the Papau, a tree bearing a fleshy fruit of the size of a small melon.

CARICOUS, in medicine, an epithet given to tumours resembling a fig.

THE "CARBONIC ACID" IN THE ATMOSPHERE IS GREATER DURING THE DAY IN TOWN THAN IN THE COUNTRY, AND AT NIGHT THE REVERSE.

AS "CARBONIC ACID" IS ALWAYS PRODUCED BY THE RESPIRATION OF ANIMALS, CROWDED ASSEMBLIES ARE PREJUDICIAL TO HEALTH.



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CARTE, in fencing, a thrust with a sword at the inside of the upper part of the body.

CARTEL, an agreement between two states for the exchange of their prisoners of war.——A *cartel-ship*, a ship commissioned in time of war to exchange the prisoners of any two hostile powers; also to carry any particular request from one power to another. The officer who commands her is ordered to carry no cargo, ammunition, or implements of war, except a gun for the purpose of firing signals.

CARTE'SIANS, those who adhere to the opinions of Des-Cartes. This philosopher has laid down two principles, the one metaphysical, the other physical. The metaphysical proposition is this; "I think, therefore I am;" the physical one, "Nothing exists but substance." Substance he makes of two kinds; the one a substance that thinks, the other a substance extended; whence actual thought and actual extension are the essence of substance.

CARTHAGIN'IAN, a native of ancient Carthage, or something pertaining to that celebrated city, which was situated on the northern coast of Africa, about twelve miles from the modern Tunis. It was founded by the Phœnicians, and destroyed by the Romans.

CARTHAMUS, in botany, Wild or Bastard Saffron, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*.

CARTHU'SIANS, a religious order, founded in the year 1080, by one Bruno. They received their name from Chartreuse, the place of their institution. They are so remarkable for their austerity, that they never leave their cells except to go to church, nor speak to any person without leave.

CARTILAGE, or in common language *gristle*, a part of the animal body, harder and drier than a ligament, and softer than a bone; its use is to render the articulation of the bones more easy. Of the cartilages that unite the bones together, some join them so firmly, as to allow no sensible motion; and others, in such a manner, as to allow of different motions, as in those by which the bodies of the vertebræ are connected. The first grow easily hard, the other appear, in some measure, viscid, and retain their flexibility.

CARTILA'GINOUS FISHES, those having cartilaginous instead of bony skeletons. Many of these are viviparous, as the ray and shark; others oviparous, as the sturgeon. They are now subdivided into *Branchiostegi* and *Chondropterygii*.—— *Cartilaginous leaf*, in botany, a leaf surrounded with a margin, thicker than the rest, but composed of the same substance

CARTOON', a design drawn upon large sheets of paper for the purpose of being traced upon any other substance, where the subject is to be finished. The most celebrated cartoons in existence are those of Raphael, seven of which are at Hampton-Court, and were originally designed for tapestry.

CARTOUCH', a case of wood holding about four hundred musket balls, besides iron balls, from six to ten, to be fired out of a howitzer. Also, a portable box for charges. ——In architecture, *cartouches* are blocks or modillions used in the cornices of wainscoted apartments: also ornaments representing a scroll of paper.

CARTRIDGE, a case of paper or parchment filled with gunpowder, and used in the charging of guns. The cartridges for small arms, prepared for battle, contain the powder and ball: those for cannon and mortars are made of pasteboard or tin. Cartridges without balls are called *blank-cartridges*.——The *cartridge-box* is a case of wood covered with leather, with cells for cartridges, and worn upon a belt thrown over the left shoulder.

CARTULARY, or CHARTULARY, a register-book, or record, as of a monastery.

CAR'UCATE, in old deeds, as much land as one team can plough in a year.

CAR'UNCLE, in surgery, a small fleshy excrescence, either natural or morbid.

CARV'ING, the art of cutting wood into various forms and figures.

CARYATIDES, in architecture, columns or pillars shaped like the bodies of women, and in the dress of the Caryan people. They were erected as trophies, and intended to represent the Carian women who were taken captives by the Athenians. Other female figures were afterwards used in the same manner, but they were called by the same name.

CARYOPHYLLEÆ, the 22nd Linnæan natural order of plants, containing the pink, carnation, &c.

CARYOPHYL'LEOUS, in botany, an epithet given to such flowers as have five petals with long claws, in a tubular calyx.

CASAR'CA, in ornithology, a fowl of the genus *anas*, called also Ruddygoose, met with in Russia and Siberia.

CASCA'DE, a small waterfall, either natural or artificial. The word is applied to such as are less than a cataract.

CASCAL'HO, a deposit of gravel, sand, and pebbles, in which the diamond is found.

CASCARIL'LA, in medicine, the word originally used to signify Peruvian bark, but which is now applied to the bark of the *croton cascarilla*, a very excellent tonic.

CASE, the particular state, condition, or circumstances that befal a person, or in which he is placed. Also, any outside covering which serves to enclose a thing entirely, as packing-cases, or knife-cases. In carpentry, the case of a door is the wooden frame in which it is hung. In printing, it is a frame of wood, with numerous small partitions for the letters.——CASE, in grammar, implies the different inflections or terminations of nouns, serving to express the different relations they bear to each other and the things they represent.——*Action on the case*, in law, is an action in which the whole cause of complaint is set out in the writ.

CA'SE-HARDENING, a method of preparing iron, so as to render its outer sur-



WHEN THE BODY HAS BEEN LONG IN AN ERECT POSITION, THE COMPRESSION OF THE "CARTILAGES" DIMINISHES A PERSON'S HEIGHT.

THE CELEBRATED CARTOON OF THE SCHOOL OF ATHENS, CARRIED TO PARIS BY THE FRENCH, IS PRESERVED IN THE AMBROSIAN GALLERY AT MILAN.

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off their skins, horns, &c. when the old fall off to make room for the new.

CAS'TLE, a fortress or place rendered defenceable, either by nature or art.——English castles, walled with stone, and designed for residence as well as defence, are for the most part of no higher date than the Conquest. Those previously erected had been suffered to fall into ruin; and many writers have assigned this circumstance as a reason for the facility with which William the Norman made himself master of the country. It was the policy of this able general to build a considerable number; and in process of time the martial tenants of the crown erected them for themselves; so that towards the end of Stephen's reign, we are told that there existed upwards of eleven hundred. At this period castles were an evil of the greatest magnitude to both the sovereign and the subject; considerable struggles appear to have taken place with regard to their continuance; several were demolished; and their general decline commenced. A complete castle consisted of a ditch or moat, an outwork, called a barbican, which guarded the gate and drawbridge; an artificial mount; an outer and inner ballium or inclosure; and the keep, or lofty tower, in which the owner or governor resided, and under which were the dungeons.——*Castle-guard*, a feudal tenure, or knight service, which obliged the tenant to perform service within the realm, without limitation of time.——*Castle-ward*, an imposition laid upon subjects dwelling within a certain distance of a castle, for the purpose of maintaining watch and ward in the castle.

CAS'TOR, in zoology, the *Beaver*. Also, a reddish-brown substance, of a strong penetrating smell, taken from bags in the groin of the beaver: it is a powerful antispasmodic.

CAS'TORIN, or CAS'TORINE, in chemistry, an animal principle discovered in castor when boiled in alcohol.

CASTOR-OIL, in medicine, the oil of the *Ricinus*, or *Palma Christi*, a West Indian plant, and which is obtained from the nuts or seeds by expression or decoction. It is a mild and safe cathartic.

CASTRA'TION, in botany, the cutting off of the anthers, or the tops of the stamens of flowers, before the ripening of the pollen.

CAS'UISTRY, the science of resolving cases of doubtful propriety, or of determining the lawfulness or unlawfulness of any act, by rules and principles drawn from the Scriptures, from the laws of society, or from reason.

CA'SUS FŒD'ERIS, the case stipulated by treaty, or which comes within the terms of compact.

CA'SUS OMIS'SUS, in law, where any particular thing is omitted, and not provided for by the statute.

CAT, a well known domestic animal, of the feline genus, but sometimes wild in the woods, and large and ferocious.——CAT, a term for a ship usually employed in the coal trade.——Also a sort of strong tackle for drawing up the anchor.——It is also a military term for a kind of shed under which soldiers conceal themselves while filling up a ditch or mining a wall.

CATABAP'TIST, one who is averse to the Christian rite or ceremony of baptism.

CATACHRE'SIS, in rhetoric, a trope which borrows the name of one thing to express another. Thus Milton, in describing Raphael's descent from the empyreal heaven, says,

"Down thither prone in flight
He speeds, and thro' the vast ethereal sky
*Sails* between worlds and worlds."

So in Scripture we read of the "*blood* of the grape." A catechresis, in fact, is the abuse of a trope, or when a word is too far wrested from its original signification.

CAT'ACOMB, a grotto or subterraneous place for the burial of the dead. It is generally applied to a vast number of subterraneous sepulchres, in the Appian Way, near Rome; supposed to be the cells in which were deposited the bodies of the primitive Christian martyrs. But there are now many other catacombs, as at Paris, &c.

CAT'AMOUNT, in zoology, the wild cat, or cat of the mountain, of North America.

CATACLA'SIS, in medicine, a breaking or distortion in general; but particularly that of the eye.

CATACOUSTICS, an appellation given to the doctrine of reflected sounds, called also *catophonics*.

CATADRO'MUS, in antiquity, the stadium, or place where races were run.

CATAGMATIC, in anatomy, an epithet for that which has the quality of promoting the union of fractured bones.

CATALEP'SIS, or CAT'ALEPSY, a kind of apoplexy, in which the patient is speechless, senseless, and fixed in one posture, with his eyes open, though without seeing or understanding.

CATAL'PA, in botany, a South American tree, of the genus *bignonia*, or trumpet-flower, remarkable for its beautiful appearance when in blossom.

CATAMARAN', a sort of floating raft, originally used in China as a fishing boat.

CAT'APHRACT, in the ancient military art, a piece of heavy defensive armour, formed of cloth or leather, strengthened with scales or links, and used to defend the breast, or whole body, or even the horse as well as the rider.

CAT'APLASM, a poultice applied to some part of the body, to excite or repel heat, or to relax the skin, &c. When mustard is an ingredient, it is called a *sinapism*.

CATAPUL'TA, or CAT'APULT, in antiquity, a military engine used for throwing arrows, darts, and stones upon the enemy. Some of these engines would throw stones of a hundred weight. Josephus takes notice of the surprising effects of these engines, and says, that the stones thrown out of them beat down the battlements, knocked off the angles of the towers, and would level





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CATHE'DRAL, the episcopal church, or a church where there is a bishop's seat or see. A cathedral was originally different from what it is now, the Christians, till the time of Constantine, having no liberty to build any temple. By their churches they only meant their assemblies; and by their cathedrals, nothing more than consistories.

CATHERINE-WHEEL, in architecture, a large circular ornament in Gothic windows. Also, a sort of fire-works constructed in the form of a wheel, which is made to turn round when it is let off.

CATH'ETER, in surgery, a tubular instrument, usually made of silver, to be introduced into the bladder, in order to search for the stone, or discharge the urine when suppressed; also a bougie made of silver or caoutchouc.

CATH'ETUS, in geometry, a line or radius falling perpendicularly on another line or surface, as the two sides of a right-angled triangle.——*Cathetus of incidence*, in catoptrics, a right line drawn from a point of the object, perpendicular to the reflecting line.——*Cathetus of reflection*, or *of the eye*, a right line drawn from the eye, perpendicular to the reflecting line.——*Cathetus of obliquation*, a right line drawn perpendicular to the speculum, in the point of incidence or reflection.——In architecture, a *cathetus* is a perpendicular line, supposed to pass through the middle of a cylindrical body, as a baluster, column, &c.

CATH'OLIC, an epithet properly signifying universal. Originally this appellation was given to the Christian church in general, but now the Romish church assumes it exclusively to itself; whence the name of Roman Catholics has been applied, since the Reformation, to the followers of the Romish doctrine and discipline. In the strict sense of the word, there is no catholic church in being, that is, no universal Christian communion.——*Catholic Majesty*, the title given to the king or queen of Spain.——*Catholic Priest*, a clergyman or priest ordained to say mass and administer the sacraments, &c., according to the rites of the Romish church.——*Catholic Emancipation*, is the abolition of those civil and ecclesiastical restraints to which the Catholics of Great Britain and Ireland were formerly subjected. The first step towards this took place in 1793, when an act of parliament was passed, which conferred the elective franchise on the Catholics, threw open to them all employments in the army in Ireland, and all offices in the navy. In 1801 the legislative union of Great Britain and Ireland took place; but though full emancipation had been promised, it was said, as a consequence of this union, it was not fulfilled; and many unsuccessful attempts were afterwards made to effect it. At length, in 1829 (April 10), a *relief bill*, abolishing the civil disabilities of Roman Catholics, by repealing the oaths of supremacy, &c., was carried by the Wellington administration. By this bill, Catholics are eligible to all offices of state, excepting the lord-chancellorships of England and Ireland, the lord-lieutenancy of Ireland, the office of regent or guardian of the united kingdom, and that of high commissioner to the church of Scotland.

CATHOLICON, a remedy for all diseases; a soft purgative electuary, so called, as being supposed an universal and efficacious purge of all humours.

CAT'KIN, in botany, a species of calyx, or rather of inflorescence, consisting of a long stem thickly covered with scales, under which are the flowers and the essential parts of the fruit; so called from its resemblance to a cat's tail. Catkins are to be found on the hazel, willow, birch, oak, poplar, &c.

CATO'CHE, or CATO'CHUS, in medicine, a tetanus or spasmodic affection, by which the patient is rendered, in an instant, as immoveable as a statue, without either sense or motion, and continues in the same posture he was in at the moment he was seized. The proximate cause of this disease is the immobility of the common sensory, from the time of the first attack, and therefore is an absolute rest of the blood in the brain, of the glands of the brain, and of all its emissories. It seldom changes to any other disease, and sometimes it has been succeeded by an epilepsy, convulsions, madness, or an atrophy, which has ended in death.

CATO'DON, in ichthyology, a genus of cetaceous fishes; the characters of which are these: they have no teeth in the upper jaw, nor any fin on the back.

CATOP'SIS, in medicine, an acute and quick perception; particularly that acuteness of the faculties which accompanies the latter stages of a consumption.

CATOPTRICS, that part of optics which explains the properties of reflected light, and particularly that which is reflected from mirrors.

CAT'SILVER, a fossil, a species of mica. It is of three sorts, the yellow or golden, white or silvery, and the black.

CATOPTROMANCY, a species of divination among the ancients, which was performed for the sick, by letting down a mirror, fastened by a thread, into a fountain before the temple of Ceres, to look at his face in it. If it appeared distorted and ghastly, it was a sign of death; if fresh and healthy, it denoted a speedy recovery.

CAT'S EYE, in mineralogy, a stone, or sub-species of quartz, very hard and transparent, of a glistening gray, with a tinge of green, yellow, or white.

CAT'S-TAIL GRASS, a kind of reed, of the genus *typha*, bearing a spike, like the tail of a cat.

CATTLE, horned beasts, that feed in pasture, or generally all four-footed beasts that serve for domestic purposes.

CAU'DEX, in botany, the stem of a tree.

CAUK, a name given by miners to certain specimens of the compact sulphate of barytes. The same word is sometimes given to masses composed of concentric lamellar concretions.



GEORGE III. DECLARED THAT CATHOLIC EMANCIPATION WAS INCONSISTENT WITH HIS CORONATION OATH, AND FIRMLY OPPOSED IT.

THE CATHOLIC EMANCIPATION BILL WAS REJECTED BY THE LORDS IN 1825, WHEN THE DUKE OF YORK SOLEMNLY OPPOSED IT.

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of Scotland. The grotto of Antiparos, in the Archipelago, is celebrated for its magnificence. In some parts, immense columns descend to the floor; others present the appearance of trees and brooks turned to marble. The Peak Cavern, in Derbyshire is also a celebrated curiosity of this kind. It is nearly half a mile in length, and, at its lowest part, 600 feet below the surface. Many caves are formed by the lava of volcanoes. In the Cevennes mountains, in France, are caverns and grottoes of great extent, and which abound in objects of curiosity. But the largest we read of is the cavern of Guacharo, in South America, which is said to extend for leagues.

CAVIARE, (pron. *cavee'r*) the spawn or hard roes of sturgeon, made into cakes, salted and dried in the sun, much used in Russia, and other parts of the continent.

CAVETTO, in architecture, a hollow member, or round concave moulding, containing the quadrant of a circle; and used as an ornament in cornices.

CAV'EZON, a sort of nose-band, either of iron, leather, or wood, sometimes flat, and at other times hollow or twisted, which is put on the nose of a horse, to wring it, and thus to forward the suppling and breaking of him.

CAV'IN, in military affairs, a natural hollow sufficiently capacious to lodge a body of troops, and facilitate their approsch to a place.

CAV'OLINITE, a newly-discovered mineral, occurring in the interior of calcareous balls, &c.

CAYENNE PEPPER, a pungent ingredient in soups and highly-seasoned dishes, made from the fruit of different species of capsicum, which when ripe, is gathered, dried in the sun, and then pounded. It is eaten both with animal and vegetable food, and is mixed, in greater or less proportion, with almost all kinds of sauces. It is used also in medicine as a stimulant, and is said to have been found efficacious in many gouty and paralytic affections.

CE'DRAT, in botany, a species of citron-tree.

CE'DRIA, or CE'DRIUM, a resinous liquor, issuing from the great cedar tree, or cedar of Lebanon. It yields a strong smell, is transparent, and of a thick unctuous consistence. It is possessed of two opposite qualities, viz. to preserve dead bodies, by its drying and consuming superfluous moisture, without damaging the solid parts; and to putrify the soft and tender parts of living bodies, without exciting pain.

CE'DRUS, the CE'DAR, in botany, is an evergreen tree, growing to a great size, and remarkable for its durability. Cedar-wood, which is of a fragrant smell and fine grain, is almost incorruptible by reason of its bitterness, which renders it distasteful to worms. Historians tell us, that some of this timber was found in the temple of Apollo at Utica, two thousand years old. The cedars of Lebanon are famous, as having been used by Solomon in building the temple of Jerusalem.

CEIL'ING, in architecture, the upper part or roof of a room, being a lay or covering of plaster over laths, nailed on the bottom of the joists which bear the floor of the upper room, or on joists put up for that purpose where there is no upper room, hence called ceiling joists.

CEL'ARENT, in logic, a mode of syllogism, wherein the major and conclusion are universal negative propositions, and the minor an universal affirmative; as "No man that is a hypocrite can be saved: Every man who with his lips only cries Lord, Lord, is a hypocrite: Therefore, no man, who with his lips only cries Lord, Lord, can be saved."

CEL'ERES, in Roman antiquity, a regiment of body guards belonging to the Roman kings, established by Romulus, and composed of 300 young men chosen out of the most illustrious Roman families, and approved by the suffrages of the curiæ of the people, each of which furnished ten.

CELESTIAL, in its first and obvious sense, denotes something pertaining to, or dwelling in heaven. In mythology, the term is applied to the residence of the gods, supposed to be in the clouds or stars; and hence the space in which the stars are situated are commonly called the celestial spaces.

CEL'ESTINE, in mineralogy, native sulphate of strontian; it receives its name from its occasionally being of a delicate blue colour.

CEL'ESTINS, a religious order of Christians, reformed from the Bernardins by Pope Celestin V. The Celestins rise two hours after midnight to say matins; they eat no flesh at any time, except when sick, and fast often. Their habit is a white gown, a capuche, and a black scapulary.

CELEUS'MA, in antiquity, a naval shout serving as a signal for the mariners to ply their oars, or to cease from rowing. It was also made use of to signify the joyful acclamation of vintagers, and the shouts of the conquerors over the vanquished.

CELIB'ACY, an unmarried or single state of life, to which, according to the doctrine, or at least the discipline of the church of Rome, the clergy are obliged to conform.

CELL, in its first and obvious sense, a small, close apartment, as in a prison; and in a less restricted sense, it denotes any small cavity or hollow place; as the *cells* of the brain, the *cells* of a honeycomb, &c. ——In anatomy, a little bag or bladder, containing fluid or other matter; as the *adipose cells*, containing fat.——In botany, a hollow place in a capsule, in which seeds are lodged.

CEL'LULAR MEMBRANE, a net-work of fine threads, the masses of which are filled with thin plates of fat or fluid, and which membrane surrounds every muscle, artery, vein, nerve, and organ of the body.

CELTIC, pertaining to the *Celts*, or primitive inhabitants of Britain, Gaul, Spain. Thus we say *Celtic* customs, *Celtic* origin, *Celtic* remains, &c.

CEM'ENT, any glutinous or other sub-



THE AROMATIC OIL IN CEDAR AND ROSEWOOD SECURES ARTICLES MADE OF THEM FROM THE DESTRUCTIVE ATTACKS OF INSECTS.

LUTHER OPENLY DENOUNCED CLERICAL CELIBACY, AND IN 1525 HE MARRIED A NUN, NAMED CATHERIN VON BORA.

A "CENTURION" IN THE ROMAN ARMIES COMMANDED A COMPANY, ANSWERING TO A CAPTAIN OF INFANTRY AT THE PRESENT DAY.

a genus of plants, of numerous species; the *lesser centaury* is a species of *gentiana*.

CEN'TENARY, the number of a hundred, or pertaining thereto. Hence the epithet *centennial* for what regularly occurs once in a century.

CENTESIMA'TION, a military punishment, in cases of desertion, mutiny, &c., when every hundredth man is selected for execution.

CENTIFO'LIOUS, in botany, an epithet for having a hundred leaves.

CENTINO'DIA, in botany, a herb so called from its having many knobs or joints: the *Polygonum* of Linnæus.

CENTIPEDE, an insect having a hundred feet. In entomology, insects of the genus *Scolopendra*, all of which have numerous feet.

CEN'TO, in poetry, a work wholly composed of verses or passages, promiscuously taken from other authors, and disposed in a new order.

CENTRAL FIRE, a supposed perpetual fire, which, according to the theory of some philosophers, exists in the centre of the earth, and to which, in ancient times, volcanoes and other similar phenomena were attributed.

CEN'TRE, or CEN'TER, a point equally distant from the extremties of a line, figure, or body.——*Centre of gravity*, that point about which all the points of a body, in any situation, exactly balance each other.——*Centre of motion*, the point which remains at rest, while all the other parts of a body move round it.

CENTRIFU'GAL FORCE, the tendency with which bodies restrained in circular motion, endeavour to fly off in a tangent to the periphery of the curve.

CENTRIPE'TAL FORCE, the tendency with which bodies move, or endeavour to move, towards the centre of a system of bodies. Such is gravity, or that force whereby bodies tend towards the centre of the earth; magnetical attraction, whereby the load-stone draws iron; and that force, whatever it be, whereby the planets are continually drawn back from right-lined motions, and made to move in curves.

CENTUM'VIRI, in Roman antiquity, judges appointed to decide common causes among the people. Three were chosen out of each tribe; and though there were five more than a hundred, they were nevertheless called centumviri, from the round number *centum*.

CENTU'RION, among the Romans, an officer in the infantry, who commanded a century, or a hundred men. The Roman legions were, in fact, divided into *centuries*.

CENTURY, in a general sense, denotes a hundred; or anything divided into or consisting of a hundred parts. The Roman people, when they were assembled for the electing of magistrates, enacting of laws, or deliberating upon any public affair, were always divided into centuries; and voted by centuries, in order that their suffrages might be the more easily collected; whence these assemblies were called *comitia centuriata*. This mode of dividing the Roman people was introduced by Servius Tullius: the first class contained eighty, to which were added the eighteen centuries of the knights; the three following classes had each twenty centuries, the fifth thirty, and the sixth only one century. —— In chronology, it means the space of one hundred years; and this is the most common signification of the word. As we begin our common computation of time from the incarnation of Christ, the word is generally applied to some term of a hundred years subsequent to it.

CEPHAL'IC, an epithet for medicines which are good for the head-ache.

CEPH'EUS, in astronomy, a constellation of the northern hemisphere.

CE'PHUS, a fowl of the duck kind; also the Mona, a species of monkey.

CERAM'BYX, in entomology, a genus of beetles, whose antennæ are long and setaceous, and the thorax oblong and rounded. Under this genus is comprehended the capricorn-beetle, and a number of other species.

CERAS'TIUM, in botany, a genus of the *decandria-pentagynia* class of plants, the flower of which consists of five bifid petals; and its fruit is a long unilocular pod, containing numerous roundish seeds.

CER'ASIN, any gummy substance which swells in cold water, but does not readily dissolve in it.

CER'ASITE, a petrifaction resembling a cherry.

CERASTES, in zoology, the name of a serpent, of the genus *Coluber*, which the ancients supposed to have horns.

CE'RATE, in medicine, a composition made of oil, wax, and other ingredients; used externally in several diseases, where plasters are necessary.

CERATITES, the fossil unicorn; a stone in the shape of a horn.

CERATOGLOS'SUS, in anatomy, the name of a pair of muscles, serving to draw the tongue directly into the mouth; but if only one of them acts, it draws the tongue to one side of the mouth.

CERATOI'DES, in anatomy, a name for the *tunica cornea* of the eye.

CERATOPHYL'LUM, in botany, a genus of perennial plants, of the *monœcia-polyandria* class.

CERAUNIA, in mineralogy, thunderstones; a variety of the *belemnitibus nautilites* of Linnæus.

CERAU'NIUM, in botany, a kind of fungus which, according to Pliny, grows plentifully after thunder.

CER'BERA, in botany, a genus of the *pentandria-monogynia* class of plants, the corolla of which consists of a single funnel-shaped petal; the fruit is a large, round, fleshy drupe, marked with a longitudinal furrow on the side, and containing two cells, in each of which is a single seed, or nut. The species are all shrubs.

CER'CHNOS, in medicine, a wheezing noise made in respiration, owing to some disorder in the larynx, &c.

THE "CEPHALIC" VEIN, WHICH RUNS ALONG THE ARM, WAS SO NAMED, BECAUSE THE ANCIENTS USED TO OPEN IT FOR DISORDERS OF THE HEAD.



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CE'TATE, in chemistry, a compound of cetic acid, with a base.

CE'TE, an order of animals in the Linnæan system, including such as have breathing apertures on the head, tail horizontal, and pectoral fins instead of feet; as the dolphin, porpoise, and grampus, &c. *Cetaceous* fish suckle their young like land animals.

CE'TIC ACID, in chemistry, a white solid substance, tasteless and inodorous, formed from spermaceti.

CETOL'OGIST, one who is versed in the natural history of the whale and its kindred animals.

CE'TUS, in astronomy, the Whale, a large constellation of the southern hemisphere, containing 97 stars.

CEY'LANITE, in mineralogy, an argillaceous kind of stone, found in the island of Ceylon. Its colour is a dark blue.

CHAB'ASITE, in mineralogy, a precious stone, white and sometimes transparent: a kind of *zeolite*.

CHA'FERY, a forge in an iron mill, where the iron is hammered into bars, and brought to perfection.

CHA'FE-WAX, an officer of the chancery court, who fits the wax for sealing writs, &c.

CHAFF, in husbandry, the dry calyx of corn, that is separated from it by screening or winnowing. The word is sometimes used to denote straw or hay cut small for the food of cattle.

CHAF'FINCH, in ornithology, the English name of the *fringilla*, a well-known bird, with an iron-coloured breast, and black wings spotted with white.

CHAIN, a series of connected rings, or links fitted into one another. Chains are made of various metals, *sizes*, and forms, suited to different purposes.——In surveying, a *chain* is a measure of length, made of a certain number of links of iron wire, serving to measure a certain quantity of ground. Gunter's chain consists of a hundred such links, each measuring 7.92 inches, and consequently equal to 66 feet or 4 poles. ——In nautical language, *chains* are strong links or plaits of iron, the lower ends of which are bolted through a ship's sides to the timbers.——*Chain-boat*, a large boat fitted for getting up mooring chains, anchors, &c.——*Chain-shot*, two balls connected by a chain: they are used at sea for cutting the shrouds and rigging of a ship. ——A *chain-pump* consists of a long chain, equipped with a sufficient number of valves, moving on two wheels; and is managed by a long winch, on which several men may be employed at the same time.——*Chain-wales* of a ship, are broad and thick planks projecting from a ship's side, abreast of and behind the masts.——A *top-chain*, on board a ship, is a chain to sling the sail-yards in time of battle, to prevent their falling, when the ropes that support them are shot away. ——*Chain-work*, work consisting of threads, cords, and the like, linked together in the form of a chain, as tambour or net-work, &c.

CHAIR, *(cathedra)*, was anciently the *suggestum*, or pulpit, whence the priest or public orator spoke to the people. [See CATHEDRA.] It is still applied to the place whence professors in universities deliver their lectures; thus we say, the professor's chair. It is commonly used for a speaker or president of a public council or assembly, as the *speaker's chair;* and by a metonymy, the speaker himself; as, to address the *chair*. ——*Chair*, among the Roman Catholics, certain feasts held anciently in commemoration of the translation of the see or seat of the vicarage of Christ by St. Peter.—— *Curule Chair*, in Roman antiquity, an ivory seat placed on a car, wherein were seated the chief magistrates of Rome, and those to whom the honour of a triumph was granted.

CHALA'ZA, among naturalists, a white knotty string at each end of an egg, whereby the yolk and white are connected together. ——In medicine, it is a disorder in the eyelids, well known by the name of a *stye*.

CHALCAN'THA, in natural history, a kind of compound salts, of a coarse and irregular structure, hard, and naturally impure and opaque.

CHAL'CEDONY, or CAL'CEDONY, in mineralogy, a genus of semipellucid gems, of an even and regular texture, of a semiopaque crystaline basis, and variegated with different coloured cloudy spots. It occurs in small veins, or in cavities of other minerals, and appears to have been formed by the filtration of siliceous matter. Under it may be grouped common chalcedony, heliotrope, carnelian, chrysoprase, onyx, sardonyx, and sard.

CHAL'CEDONYX, a variety of agate, in which white and gray layers alternate.

CHAL'CITE, in chemistry, sulphate of iron, of a red colour, so far calcined as to have lost a considerable part of its acid.

CHAL'CIS, in ichthyology, a fish of the turbot kind.——In entomology, a class of insects, order *hymenoptera*.

CHALCID'ICUM, in ancient architecture, a magnificent hall belonging to a tribunal or court of justice.

CHALDEE', or CHALDA'IC, the *language* spoken by the Chaldeans, or people of Chaldea: it is a dialect of the Hebrew.

CHAL'ICE, the communion cup, or vessel used to administer the wine in the sacrament of the eucharist.

CHALI'ZA, in Hebrew antiquity, the ceremony whereby a woman, left a widow, pulled off her brother-in-law's shoes, who should have espoused her; after which she was at liberty to marry whom she pleased.

CHALK, in natural history, a well known calcareous earth, of an opaque white colour, found in hard masses, and called *creta* and *terra creta*. Chalk thrown into water, raises a great number of bubbles, with a hissing noise, and slowly diffuses itself into an impalpable powder. It contains a large portion of carbonic acid, and is a subspecies of carbonate of lime.——*Black chalk*, is a kind of ochreous earth, of a close structure,



THE "CETACEOUS" FISHES INCLUDE THE GENERA MORODON, BALÆNA, PHYSETER, AND DELPHINUS; MOST OF WHICH HAVE GILLS.

THE PRESIDENT OR SENIOR MEMBER OF A COMMITTEE, ASSOCIATION, OR PUBLIC COMPANY, IS TERMED THE "CHAIRMAN."

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cause, it was always required that there should be a decree of the judge to authorise the combat: when the judge had pronounced sentence, the accused threw a gage or pledge, originally a glove or gantlet, which being taken up by the accuser, they were both taken into safe custody, till the day of battle appointed by the judge. Before the champions took the field, their heads were shaved to a kind of crown or round, which was left at the top: they then made oath that they believed the person who retained them to be in the right, &c. They always engaged on foot, and with no other weapon than a club and a shield; and they always made an offering to the church, that God might assist them in the battle.——*Champion of the King (or Queen)*, an officer who rides armed into Westminster Hall on the coronation, while the sovereign is at dinner, and by herald makes proclamation, "That if any man shall deny the king's (or queen's) title to the crown, he is there ready to defend it in single combat:" which being done, the sovereign drinks to him, and then presents him with the cup for his fee.

CHAN'CEL, that part of the choir of a church between the altar and the balustrade that incloses it, where the minister is placed at the celebration of the communion. The *Chancel* is also the rector's freehold and part of his glebe, and therefore he is obliged to repair it; but where the rectory is impropriate, the impropriator must do it.

CHAN'CELLOR. Under the Roman emperors, a chancellor signified a chief notary or scribe; but in England it means an officer invested with high judicial powers. ——*The Lord High Chancellor of Great Britain* is one of the principal officers of the civil government, created without writ or patent, by the mere delivery of the king's great seal into his custody. He is a privy-counsellor by his office, and prolocutor of the House of Lords by prescription. He also appoints all the justices of the peace throughout the kingdom. Persons exercising this office in former times having been ecclesiastics, and superintendants of the royal chapel, the Lord Chancellor is still styled *keeper of the king's conscience*; and for the same reason he is visitor, in right of the king, of all hospitals and colleges of the king's foundation; and patron of all the king's livings under the value of 20*l.* per annum in the king's books. He is the general guardian of all infants, idiots, and lunatics; has a controul over all public charities; and a jurisdiction of vast extent, as the head of the law, in his Court of Chancery; where he decides without the assistance of a jury, but from which there is an appeal to the House of Lords.—— *Chancellor of a Diocese*, a lay officer under a bishop, versed in the canon and civil law, who is judge of his court.——*Chancellor of a Cathedral*, an officer who hears lessons in the church, inspects schools, hears causes, writes letters, and applies the seal of the chapter, keeps the books, &c.——*Chancellor of a University*, an officer who seals the diplomas, or letters of degree, &c. The chancellors of Oxford and Cambridge are selected from among the prime nobility: the former holds his office for life; the latter is elected every three years.——*Chancellor of the Duchy of Lancaster*, an officer appointed chiefly to determine controversies between the king and his tenants of the duchy land, and otherwise to direct all the king's affairs belonging to that court. ——*Chancellor of the Exchequer*, an officer who presides in that court, and takes care of the interests of the crown. He has power with the lord treasurer, to lease the crown lands, and with others, to compound for forfeiture of lands, on penal statutes: he has also great authority in managing the royal revenues, and in all matters relating to the finances of the state.—— *Chancellor of the Order of the Garter*, and other military orders, is an officer who seals the commissions and mandates of the chapter and assembly of the knights, keeps the register of their proceedings, and delivers their acts under the seal of their order.

CHAN'CE-MEDLEY, in law, the accidental killing of a person, not altogether without the killer's fault, though without any evil intention.

CHAN'CERY, the grand court of equity and conscience, instituted to moderate the rigour of the other courts that are bound to the strict letter of the law. In this court all patents, the generality of commissions, deeds between parties respecting lands and estates, treaties with foreign princes, &c., are sealed and enrolled. Out of it are issued writs to convene the parliament and convocation, proclamations and charters, &c. And from this court issue all original writs that pass under the great seal, commissions of charitable uses, bankruptcy, idiocy, lunacy, &c.

CHAN'CES, a branch of mathematics, which estimates ratios of probability.

CHA'NGEABLE ROSE, or Martinico Rose, the *Hibiscus mutabilis* of Linnæus. The flowers of this plant are white at their first opening, then change to a blush-rose colour, and as they decay turn to a purple.

CHA'NGES, in mathematics, the permutations or variations which any number of things may undergo in regard to position or order, &c.: as, how many different ways letters may be transposed so as to form words; or how many changes may be rung on a given number of bells, &c.

CHAN'NEL, the deeper part of a strait, bay, or harbour, where the principal current flows, either of tide or fresh water, or which is most convenient for the track of a ship. Also, a narrow sea between two continents, or a continent and an island; as the British or Irish *channel*.

CHAN'TRY, a place to say mass for souls, or sing in divine worship.

CHA'OS, that confusion in which matter is supposed to have existed before the world was produced by the creative power of Omnipotence; or, in other words, the unformed primeval matter of which every





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find them among our British ancestors.——The Roman *triumphal chariot* was generally made of ivory, round like a tower, or rather of a cylindrical figure; sometimes gilt at the top and ornamented with crowns; and, to represent a victory more naturally, they used to stain it with blood. It was usually drawn by four white horses, but oftentimes by lions, elephants, tigers, bears, leopards, &c.

CHARI'TIA, a Roman nocturnal festival and dance kept in honour of the Graces, when sweet-meats called *charisia* were distributed among the guests.

CHARISTIA, a solemn festival among the Romans kept in the month of February. It was well worthy the imitation of Christians; for at this time the relations of each family compromised any differences that had arisen between them, and renewed their former friendships upon the principles of pure benevolence and good-will.

CHA'RITY, in a general sense, that disposition of heart which inclines men to think favourably of their fellow-men, and to do them good; or liberality and benevolence, either in alms-giving or in contributing towards public charitable institutions.——In a theological sense, supreme love to God, and universal good-will to men.

CHARLATAN, one who makes unwarrantable pretensions to skill, and prates much in his own favour. The original import of the word was an empiric, or quack, who retailed his medicines on a public stage, and drew the people about him by his buffooneries.

CHARLES'S WAIN, in astronomy, seven stars in the constellation called *Ursa Major*, or the Great Bear.

CHAR'LOCK, the English name of a plant called by botanists *rapistrum*. It is a very pernicious weed among grain.

CHARM, some magical words, characters, verses, &c. imagined to possess some occult and unintelligible power; by which, with the supposed assistance of the devil, witches and sorcerers have pretended to do wonderful things. The word, in its more modern acceptation, is used to describe that which delights and attracts the heart.

CHART, a hydrographical map, drawn for the use of navigators, and showing the situation of coasts, rocks, sand-banks, and sea-marks; the course of currents; the depth of soundings; and the direction of regular winds.——*Mercator's Chart* is one on which the meridians are straight lines, parallel and equidistant; the parallels are also straight lines, and parallel to each other, but the distance between them increases from the equinoctial towards either pole, in the ratio of the secant of the latitude to the radius.——*Globular Chart*, is a meridional projection, in which the distance of the eye from the plane of the meridian, upon which the projection is made, is supposed to be equal to the sine of the angle of 45 degrees.——*Heliographic Charts*, descriptions of the body of the sun, and of the maculæ or spots observed on its disk.——*Selenographic Charts*, are draughts of particular places, or small parts of the earth.

CHARTER, in law, a written instrument, executed with usual forms, whereby the king grants privileges to towns, corporations, &c.; whence the name of Magna Charta, or the Great Charter of Liberties granted to the people of the whole realm.

CHARTER-PARTY, in commerce, an agreement respecting the hire of a vessel and the freight; which must contain the name and burden of the vessel, the names of the master and freighter, the price or rate of the freight, the time of loading and unloading, and other stipulated conditions.

CHARYBDIS, a much-dreaded vortex at the entrance of the Sicilian straits, celebrated for its engulfing perils, by the ancient writers. It is, however, no longer dreadful to navigators, who, in a quiet sea, and particularly with a south wind, cross it without danger.

CHASE, in law, a part of a forest for game, which may be possessed by a subject: though a forest cannot. The word *chase* has also several meanings in maritime language; as, *chase-guns*, that lie at the head, to fire on a vessel that is pursued, in distinction to *stern-chasers*, which fire on the pursuer.——With huntsmen, the *chase* is a figurative expression for their sport in general.

CHASING, in sculpture, the art of embossing on metals, or representing figures thereon by a kind of *basso-relievo*, punched out from behind, and carved on the front with small gravers.

CHASSEURS, a French term for a select body of light infantry, formed on the left of a battalion, and who are required to be particularly light, active, and courageous.——*Chasseurs à cheval*, a kind of light horse in the French service.

CHATEAU, a French word, formerly used for a castle or baronial seat in France; but now simply for a country seat.

CHATOYANT, in mineralogy, a hard semi-transparent stone, generally very small, which being cut smooth, presents an undulating or wavy light, and is of a yellowish grey or green colour.——The word *chatoyant* is also used to express a changing undulating lustre, like that of a cat's eye in the dark.

CHATTELS, in law, personal goods, movable, or immovable.

CHECK-MATE, the movement in a game of chess that hinders the opposite men from moving, so that the game is finished, and the party who is checkmated has lost.

CHECKY, in heraldry, a term for the shield, or any part of it, when it is divided into checks, or squares.

CHEEKS, a general name among mechanics for those pieces of timber, &c., in any machine, which form corresponding sides, or which are double and alike.

CHEESE, the curd of milk coagulated by rennet, and separated from the whey, then pressed or hardened in a vat, hoop, or mould.——*Cheese-press*, an engine for press-



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any just conception of the stages of discovery through which it has yet to pass.

CHER'RY, the PRU'NUS CERA'SUS, a fruit, the original stock of which is the wild cherry. The gradual effect of cultivation has been the production of several pleasant varieties, all superior to the fruits of the parent stock. The wood of the cherry-tree, which is hard and tough, is much used by turners, cabinet-makers, &c. The gum that exudes from the bark is said to be, in many respects, equal to gum arabic, and is considered very nutritive.

CHER'RY-LAUREL, the PRU'NO-LAU'RUS CERA'SUS, which produces laurel-water, a most powerful poison, the strength of which (like that of peach-kernels, &c.), depends on the presence of prussic acid.

CHER'SONESE, a tract of land, of any indefinite extent, which is nearly surrounded by water, but united to a larger tract by a neck of land or isthmus.

CHERT, in mineralogy, a subspecies of rhomboidal quartz: which occurs often in metallic veins in primitive mountains. It is somewhat translucent, and of various colours.

CHER'UBIM, the plural of CHERUB, an order of angels, two of which, by the command of God, were represented as overshadowing the propitiatory or mercy-seat. They are usually represented by painters and sculptors by a child's head between wings; and in the celestial hierarchy they are placed next in order to the seraphim.

CHER'VIL, a genus of umbelliferous plants whose leaves are divided into many segments. Two species are called *Cow-weed*.

CHES'LIP, a small vermin that lies under stones and tiles.

CHESS, a game played by two persons sitting *vis-a-vis*, and having between them a checkered board, containing sixty-four squares, alternately white and black. The game affords so much variety, so much scope for calculation, so many opportunities to exhibit foresight and penetration, that it has been held in great estimation by all persons acquainted with it, and all who have conquered the difficulties of learning it. Whilst it affords enjoyment worthy of mature minds, it is an excellent exercise for the young, as it teaches patience and circumspection, strengthens the judgment, and encourages perseverance in a plan affording a prospect of eventual success, though, at the moment, the situation of things may appear very critical. It is a game of Asiatic origin. The Chinese pretend to have known it 200 years before the Christian era. In the sixth century it was brought from India to Persia, whence it was spread by the Arabians and the Crusaders all over the civilized world.——Although it may trespass a little on our limits we deem it necessary to insert the *laws of this unrivalled game*.—The board must be so placed, that each player has a white square at his right hand. Each side has eight men, consisting of a king, queen, two knights, two bishops, and two rooks or castles, besides eight pawns or foot-soldiers which are all moved according to the following rules. 1: If the board, or pieces, be improperly placed, the mistake cannot be rectified after four moves on each side are made. 2: When a player has touched a piece, he must move it, unless it was only to replace it; when he must say, *J'adoube*, or *I replace*. 3: When a player has quitted a piece he cannot recall the move. 4: If a player touch one of his adversary's pieces without saying *J'adoube*, he may be compelled to take it, or, if it cannot be taken, to move his king. 5: When a pawn has moved two steps, it may be taken by any adversary's pawn which it passes, and the capturing pawn must be placed in that square over which the other leaps. 6: The king cannot castle if he has before moved, if he is in *check*, if in castling he passes a check, or if the rook has moved. 7: Whenever a player *checks* his adversary's king, he must say *check*, otherwise the adversary need not notice the check. If the player should, on the next move, attack the queen, or any other piece, and then say *check*, his adversary may replace his last move, and defend his king. 8: When a pawn reaches the first row of the adversary's side, it may be made a queen, or any other piece the player chooses. 9: If a false move is made, and is not discovered until the next move is completed, it cannot be recalled. 10: The king cannot be moved into check, nor within one square of the adverse king, nor can any player move a piece or pawn that leaves his king in check.—The object of the game is, to bring the adversary's king into such a situation that he cannot move, which is called *check-mating*. The king can never be taken; and the play ends with a checkmate.

CHEST, which in anatomical language is called the *thorax*, is the cavity of the body between the neck and the belly, containing the pleura, the lungs, heart, œsophagus, thoracic duct, part of the vena cava, the vena azygos, &c.

CHEST'NUT, or CHES'NUT, the nut of a tree belonging to the genus *Fagus*. It is enclosed in a prickly pericarp, which contains two or more seeds. The tree grows to a great size, and produces very valuable timber.——The *Horse-chestnut* is a tree of the genus *Æsculus*. The common tree of this sort is a native of the north of Asia, and admired for the beauty of its flowers. The *Scarlet-flowering horse-chestnut* is a native of Carolina, Brazil, and the East.——There is also another, called the *Indian Rose-chestnut*, of the genus *Morsea*.

CHEVAL-DE-FRISE (generally used in the plural, CHEVAUX-DE-FRISE, (FR. pron. *sheev'o de free'z*), spikes of wood, pointed with iron, five or six feet long, fixed in a strong beam of wood, and used as a fence against cavalry, or to stop a breach, &c.

CHEVALIE'R, a gallant young man.—— In heraldry, a horseman armed at all points.

CHEVRETT'E, a military term for a





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IN THE EARLY AGES OF CHIVALRY, ARCHERY WAS CONSIDERED AS AN ESSENTIAL PART OF THE EDUCATION OF A GENTLEMAN.

per-plates, nor the still more ingenious process of transferring and adapting the print to the ware. We will merely add, that the colours, or enamels with which designs are executed on the glazed surface of ware, with colours so vitrifiable as readily to acquire lustre at a moderate heat, has not yet been practised quite a century in our potteries; but such have been the improvements in every branch of the art during late years, and with such laudable rivalry have the abilities of first-rate artists been displayed, that if absolute perfection could be attained by human labour, we might fairly expect to find it here.

CHINTZ, a fine kind of Indian painted calico.

CHIRA'GRA, in medicine, a name for the gout in the hands.

CHI'ROGRAPH, among the Anglo-Saxons, signified any public instrument of gift or conveyance, attested by the subscription and crosses of witnesses. Any deed requiring a counterpart was engrossed twice on the same piece of parchment, with a space between, on which was written *chirograph*, through which the parchment was cut, and one part given to each party. It was also anciently used for a fine: the manner of engrossing the fines, and cutting the parchment in two pieces, is still retained in the chirographer's office, in the Court of Common Pleas.

CHIROLO'GY, the art or practice of communicating thoughts by signs made by the hands and fingers; as a substitute for language.

CHIROMANCY, a species of divination, drawn from the different lines and lineaments of a person's hand; by which means, it is pretended the inclinations may be discovered. The modern word is *palmistry*.

CHIRON'OMY, in antiquity, the art of representing any past transaction by the gestures of the body, more especially by the motions of the hands: this made a part of liberal education; it had the approbation of Socrates, and was ranked by Plato among the political virtues.

CHIS'LEU, the ninth month of the Jewish year, answering to the latter part of November and the beginning of December.

CHIV'ALRY, the name anciently given to knighthood, a military dignity; also the martial exploits and qualifications of a knight. Chivalry, as a military dignity, is supposed by some to have taken its rise soon after the reign of Charlemagne, and by others as arising out of the crusades, because in these expeditions many chivalrous exploits were performed, and a proud feeling of heroism was engendered. In describing the origin, object, and character of this military institution, Gibbon the historian thus alludes to a successful candidate for the honour of knighthood, and eulogises the institution: "He was created a knight in the name of God, of St. George, and of St. Michael the Archangel. He swore to accomplish the duties of his profession; and education, example, and the public opinion, were the inviolable guardians of his oath. As the champion of God and the ladies, he devoted himself to speak the truth; to maintain the right; to protect the distressed; to practise *courtesy*, a virtue less familiar to the infidels; to despise the allurements of ease and safety; and to vindicate in every perilous adventure the honour of his character. The abuse of the same spirit provoked the illiterate knight to disdain the arts of luxury and peace; to esteem himself the sole judge and avenger of his own injuries; and proudly to neglect the laws of civil society and military discipline. Yet the benefits of this institution, to refine the temper of barbarians, and to infuse some principles of faith, justice, and humanity, were strongly felt, and have been often observed. The asperity of national prejudice was softened; and the community of religion and arms spread a similar colour and generous emulation over the face of Christendom. Abroad in enterprise and pilgrimage, at home in martial exercise, the warriors of every country were perpetually associated; and impartial taste must prefer a Gothic tournament to the Olympic games of classic antiquity. Instead of the naked spectacles which corrupted the manners of the Greeks, and banished from the stadium the virgins and matrons, the pompous decoration of the lists was crowned with the presence of chaste and high born beauty, from whose hands the conqueror received the prize of his dexterity and courage."

CHIVES, in botany, slender threads or filaments in the blossoms of plants.

CHLÆNA, in antiquity, a winter garment worn over the tunica. It was likewise used as a covering for a bed.

CHLA'MYS, in antiquity, a military habit worn over the tunica. It belonged to the patricians, and was the same in the time of war, that the toga was in the time of peace.

CHLO'RATE, in chemistry, a compound of chloric acid with a salifiable base.

CHLO'RIDE, in chemistry, a compound of chlorine with a combustible substance, as the chloride of azote, manganese, lime, &c.

CHLO'RINE, or CHLO'RIC GAS, formerly known as OXYMURIATIC ACID GAS, is by some considered as a compound, and by others as a simple substance. It combines with carburetted hydrogen, and thereby exhibits the mechanical phenomena of combustion; but will not support animal life. It discharges colours, and is used as a bleaching liquid.

CHLO'RITE, a mineral of a grass green colour, opaque, and composed of small shining grains. There are four subspecies: chlorite earth, common chlorite, chlorite slate, and foliated chlorite.

CHLORO-CAR'BONOUS ACID, in chemistry, a compound of chlorine and carbonic oxyde, formed by exposing a mixture of the two gases to the direct solar rays.

CHLORO'PAL, a recently discovered mineral, of two varieties, the conchoidal and the earthy; both possessing magnetic properties.

A TABLE SPOONFUL OF CHLORIDE OF LIME, IN A WINE-GLASS OF WATER, PURIFIES INFECTED AIR AND PREVENTS CONTAGION.



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Should the patient survive the last train of symptoms, a state of excitement and fever supervenes.—For a considerable time, the medical world was much divided in opinion as to its contagious or non-contagious nature: the disputes on this subject, however, have now nearly subsided, and the great majority of medical men are persuaded that the disease is epidemic, and not contagious in its character.

CHOL'OGOGUES, medicines which expel or evacuate bilious fæces.

CHOP'IN, a liquid measure: in France, about a pint; in Scotland, a quart.

CHORD, in music, the union of two or more sounds uttered at the same time, forming an entire harmony; as a third, fifth, and eighth.——In geometry, a right line drawn from one part of an arc of a circle to another.

CHOREG'RAPHY, the art of representing dancing by signs, as singing is by notes.

CHORE'US, in ancient poetry, a foot of two syllables; the first long, and the second short; the *trochee*.

CHORIAM'BUS, in ancient poetry, a foot compounded of a trochee and an iambus.

CHOROG'RAPHY, the art of delineating or describing some particular country or province: it differs from *geography* as a description of a particular country differs from that of the whole earth; and from *topography* as the description of a country from that of a town or district.

CHO'ROID, in anatomy, denotes the coat of the eye immediately under the sclerotica; or the inner membrane investing the brain, or the pia mater, &c.

CHO'RUS, in ancient dramatic poetry, one or more persons present on the stage during the representation, uttering an occasional commentary on the piece, preparing the audience for events that are to follow, or explaining circumstances that cannot be distinctly represented. Several examples may be referred to by the English reader, in the plays of Shakspeare. In tragedy, the chorus was at first the sole performer; at present it is wholly discontinued on the stage.——CHORUS, in music, is when, at certain periods of a song, the whole company are to join the singer in repeating certain couplets or verses.

CHOUGH, (pron. *chuff*), in ornithology, a fowl of the genus *Corvus*, nearly of the size of the crow, and mischievous, like the magpie. It is black, except the bill, legs, and feet, which are red, and is a native of the west of England, more especially the county of Cornwall, whence it is commonly called the *Cornish chough*.

CHRISM, or CHRIS'OM, in the Romish and Greek churches, an unction or annointing of children, which was formerly practised as soon as they were born.

CHRISTIAN'ITY, the religion of Christians, who derive their name from the founder CHRIST, *(The Anointed)*, and were first so designated at Antioch. The foundation of a Christian's faith and practice, his ultimate, and, in truth, only appeal, must be to the facts, the doctrines, and the precepts of the Scriptures, especially to those of the New Testament.

CHRISTENING, a term particularly applied to infant baptism, denoting the ceremony of admitting a person into the communion of the Christian church by means of baptism, or sprinkling with water.

CHRIST'MAS, the festival observed in the Christian church on the 25th of December, in commemoration of our Saviour's nativity; and celebrated in the church of England by a particular service set apart for that holy day.

CHRIST'MAS-ROSE, in botany, a plant of the genus *Helleborus*, producing beautiful white flowers about Christmas.

CHRISTOMACHI, an appellation given to all heretics who deny Christ's divinity, or maintain hetorodox opinions concerning his incarnation.

CHRIST'S-THORN, in botany, the *Rhamnus paliurus*, a deciduous shrub, having two thorns at each joint. It grows in Palestine and the south of Europe, and is supposed to have been the sort of which the crown of thorns for our Saviour was made.

CHROASTACES, a genus of pellucid gems, comprehending all those of variable colours, as viewed in different lights.

CHRO'MATE, in chemistry, a salt or compound formed by the chromic acid with a base.

CHROMATIC, in music, an epithet descriptive of that which proceeds by several consecutive semitones.

CHROMAT'ICS, that part of optics which explains the several properties of light and colour.

CHROME, in mineralogy, a metal which in its highest degree of oxydation passes into the state of an acid of a ruby red colour. It takes its name from the various and beautiful colours which its oxyde and acid communicate to minerals into whose composition they enter. Chrome gives a fine deep green to the enamel of porcelain, &c.——*Chromic yellow*, the artificial chromate of lead, is a beautiful pigment.

CHRON'IC, an epithet for inveterate diseases, or those of long duration.

CHRON'OGRAM, an inscription in which a certain date or epoch is expressed by numeral letters.

CHRONOL'OGY, the science which determines the dates of events, and the civil distinctions of time. The divisions of time are either natural or artificial; the natural divisions of time are the year, month, week, day, and hour, deduced from the motions of the heavenly bodies and suited to the purposes of civil life; the artificial divisions of time are the cycle or period, the epoch, and the æra or epoch, which have been framed for the purposes of history. Truly has it been said, "if history without chronology is dark and confused; chronology without history is dry and insipid."

CHRONOM'ETER, a time-piece of a peculiar construction, or any instrument that measures time with great exactness. They are at present much employed by navigators in determining the longitude at sea.





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darkness" to denote a deep or continual obscurity. The country is now called the Crimea.

CIM'OLITE, a species of earth, of which there are several varieties; one, of a purple colour, is the stone, or soap rock; and from another sort, found in the Isle of Wight, tobacco-pipes are made.

CINCHO'NA, the Peruvian bark, obtained from certain trees growing to the height of fifteen or twenty feet, and natives of Peru. Linnæus describes two species, the white and the coloured; and a third has been found in the West Indies, particularly in Jamaica and St. Lucia. The two latter are used in medicine. It was first introduced for the cure of intermittent fevers; and in these, when properly exhibited, it rarely fails of success.

CINC'TURE, in architecture, a ring, list, or orlo, at the top and bottom of a column, separating the shaft at one end from the base, and at the other from the capital.

CINERI'TIOUS, an appellation given to different substances, on account of their resembling ashes, either in colour or consistence.

CIN'NABAR, in natural history, is either native or factitious. *Native* cinnabar is an ore of quicksilver, moderately compact, very heavy, and of an elegant striated red colour. It is called native vermillion, and when used by painters is rendered more beautiful by grinding it with gum-water and a little saffron. It is found amorphous, or under some imitative form, and crystalized. *Factitious* cinnabar is a mixture of mercury and sulphur sublimed, and thus rendered into a fine red colour.

CIN'NAMON, a fragrant spice, obtained from the bark of a low tree, (the *laurus cinnamomum*) growing on the island of Ceylon. The true cinnamon is a most grateful aromatic, and one of the best cordial, carminative spices. Its leaves resemble those of the olive, and the fruit resembles the acorn or olive, having neither the smell nor taste of the bark; both yield an essential oil.

CINQUEFOIL, or FIVE-LEAVED CLOVER, a perennial. This plant is sometimes borne in coats of arms.

CINQUE-PORTS, the five ancient ports on the east coast of England, opposite to France, namely, Dover, Hastings, Hythe, Romney, and Sandwich, to which were afterwards added, as appendages, Winchelsea and Rye. As places where strength and vigilance were necessary, and whence ships might put to sea in cases of sudden emergency, they formerly received considerable attention from government. They have several privileges, and are within the jurisdiction of the Constable of Dover Castle, who, by his office, is called Warden of the Cinque-Ports. Until the time of Henry VIII. the Crown seems to have had no permanent navy; the Cinque-ports having always furnished nearly the whole of the shipping required for the purposes of the state. In consideration of this service, many privileges and franchises were granted to them by different sovereigns, valuable at the time, but which have now become in a great measure nominal, in consequence of the various exactions and restrictions to which they refer having long since been abolished. The freedom from toll and dues, still recognized at several ports, seems to be the most valuable right remaining to the freemen; the exemption from serving on county juries and from service in the militia are also understood as belonging to them. The jurisdiction of the Cinque-ports extends along the coast continuously from Birchington, which is to the north-east of Margate, to Seaford in Sussex; and each has one or more ports or towns members of it, some of which are corporate, and others not. In ancient times there were several courts of jurisdiction, extending over all the ports and members, and intended either as courts of appeal for persons who considered themselves injured by any of the separate and local tribunals of the different ports, or for regulating the general affairs of the whole association; but these may now be considered as obsolete, their functions having dwindled to mere matters of form.

[We had scarcely penned the foregoing paragraph when we saw an account of the splendid banquet, given at Dover, August 30, 1839, in honour of that illustrious warrior the Duke of Wellington, as Warden of the Cinque-Ports. Participating, in common with the rest of our countrymen, in those feelings which gave birth to this patriotic tribute, we hope to be excused (though we may step a little out of the usual track) for thus endeavouring to perpetuate the remembrance of so proud a day.——Dover was thronged with visitors of rank from all parts of the kingdom: the morning was ushered in by the ringing of bells and the firing of cannon; and every countenance beamed with delight. The pavilion in which the banquet was given was erected on the Priory meadow, directly opposite the large hall, called the Maison Dieu. It was of immense size, (standing on 20,420 feet of ground, including its covered ways and entrance lobbies), and was intended for the accommodation of 2,250 persons. It was gorgeously and appropriately decorated with military emblems, &c. In all parts of the hall floated a profusion of flags; and the effect of this picturesque scene, when filled with the company, was brilliant in the extreme. Party feeling and factious hostility were nobly laid aside; and many members of the British senate, peers as well as commoners, were there assembled to do homage to "the great captain of the age." Among them was Lord Brougham—the bold politician, the astute reasoner, the great forensic orator—a man who had ever taken a prominent station among the *political* opponents of the Duke, but who on that day poured forth a torrent of panegyric, which was heard with grateful delight, and of which the following detached passages will at least convey some slight idea: "On this day, and on this occasion," said his lordship, "all personal, all political feelings are quelled—all strife of party is





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CIR'CLE, in geometry, a plane figure, bounded by a curve line, called its circumference, and which is everywhere equally distant from a point within, called its centre. The circumference or periphery itself is called the circle, though improperly, as that name denotes the space contained within the circumference. A circle is described with a pair of compasses, fixing one foot in the centre and turning the other round to trace out the circumference. The circumference of every circle is supposed to be divided into 360 equal parts, called degrees and marked °; and each degree into 60 minutes, marked '.——The word *Circle* is also used to describe an assembly, or set of persons; as a political *circle*; our *circle* of friends, &c.——*Circles of latitude*, are great circles perpendicular to the plane of the ecliptic, passing through its poles and through every star and planet. *Circles* of longitude are lesser circles parallel to the ecliptic, diminishing as they recede from it. ——*Diurnal circles*, are immovable circles supposed to be described by the several stars and other points in the heavens, in the rotation of the earth round its axis.——*Horary circles*, in dialling, are the lines which show the hours on dials.

CIR'COCELE, in anatomy, a varix, or dilatation of the spermatic vein; hernia varicosa.

CIR'CUITS, certain districts or divisions of the kingdom, through which the judges pass once a year, or oftener, to hold courts and administer justice. The six jurisdictions into which England is divided by the twelve judges, are called the Home, Norfolk, Midland, Oxford, Western, and Northern circuits. Wales is also divided into North and South circuits; and Scotland, into South, West, and North.

CIR'CULATING ME'DIUM, a term in commerce, signifying the medium of exchanges, or purchases and sales, whether this medium be gold or silver coin, paper, or any other article; and it is therefore of a more comprehensive nature than the term *money*. All people have a circulating medium of some description, and, accordingly, we find all the tribes of savages hitherto discovered referring to some article in estimating the value of the various commodities which compose their capital. But from the earliest times, the precious metals, where they could be had, have been preferred for this purpose, because they comprised a sufficient value in a small compass and weight to be a convenient medium. A well-contrived, skilfully-conducted system of banking, connected with one of circulation, is one of the greatest triumphs of national economy; for the interest, as well as the reputation of individuals, is thus pledged in support of the system, and in furtherance of the general industry and prosperity.

CIRCULA'TION, in anatomy, the natural motion of the blood in a living animal, whereby it proceeds from the heart to all parts of the body by the arteries, and returns to the heart by the veins. The *circulation of the blood* is performed in the following manner: the blood is returned to the right auricle of the heart, by the descending and ascending vena cava, which, when distended, contracts and sends its blood into the right ventricle; from the right ventricle it is propelled through the pulmonary artery, to circulate through, and undergo a change in the lungs, being prevented from returning into the right auricle by the closing of the valves, which are situated for that purpose. Having undergone this change in the lungs, it is brought to the left auricle of the heart by the four pulmonary veins, and thence is evacuated into the left ventricle. The left ventricle when distended contracts, and throws the blood through the aorta to every part of the body, by the arteries, to be returned by the veins into the vena cava. It is prevented from passing back from the left ventricle into the auricle by a valvular apparatus; and the beginning of the pulmonary artery and aorta is also furnished with similar organs to prevent its returning into the ventricles.

CIR'CULUS, in anatomy, any round or annular part of the body, as the *circulus oculi*, the orb of the eye.

CIRCUMAM'BIENT, an epithet given to anything that surrounds or encompasses another on all sides; chiefly used in speaking of the air.

CIRCUMCISION, a ceremony in the Jewish and Mahometan religions, performed by cutting off the prepuce, or foreskin. This was a federal rite annexed by God, as a seal to the covenant which he made with Abraham and his posterity, and was accordingly renewed, and taken into the body of the Mosaical constitutions. The time for performing this rite was the eighth day, that is, six full days after the child was born. The Jews distinguished their proselytes into two sorts, according as they became circumcised, or not: those who submitted to this rite were looked upon as children of Abraham, and obliged to keep the laws of Moses: the uncircumcised were only bound to observe the precepts of Noah, and were called *Noachidæ*.

CIRCUMFERENTOR, a mathematical instrument used by land surveyors for taking angles by the magnetic needle. It is an instrument (where great accuracy is not desired) much used in surveying in and about woodlands, commons, harbours, sea-coasts, in the working of coal-mines, &c.

CIR'CUMFLEX, in grammar, an accent serving to note or distinguish a syllable of an intermediate sound between acute and grave: generally somewhat long.

CIRCUMFORA'NEOUS, an epithet for wandering about.——*Circumforaneous musicians*, male and female, are daily seen at the doors of hotels, in France; and sometimes they enter the room, expecting a few sous for their reward. Nor are characters of a similar description by any means rare in London.

CIRCUMGYRATION, in anatomy, the turning a limb round in the socket.

CIRCUMLOCUTION, a paraphrastical



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THE BLOOD IS SAID TO BE O ER-FIFTH OF THE WEIGHT OF THE WHOLE BODY, AND THREE-FOURTHS OF IT ARE IN THE VEINS.

CIRCUMCISION WAS AN ANCIENT PRACTICE OF THE EGYPTIANS, ETHIOPIANS, SYRIANS, PHŒNICIANS, AND OTHER ASIATIC NATIONS.

is half an hour longer than that nearest the equator.——In a popular sense, the term climate is given to any country or region differing from another in the temperature of the air; or with respect to the seasons, the quality of the soil, or even the manners of the inhabitants, without any regard to the length of the days, or to geographical position. Thus we say, a warm or cold climate, a genial climate, &c.

CLI'MAX, a figure in rhetoric, consisting of an assemblage of particulars, rising, as it were, step by step, and forming a whole in such a manner that the last idea in the former member becomes the first in the latter, till the climax, or gradation, is completed. Its strength and beauty consist in the logical connection of the ideas, and the pleasure the mind receives from perfect conviction; as may be perceived in the following example: "There is no enjoyment of property without government; no government without a magistrate; no magistrate without obedience; and no obedience where every one acts as he pleases."

CLINICAL, in its literal sense, means anything pertaining to a bed. Thus, a *clinical lecture* is a discourse from notes taken at the bed-side by a physician, with a view to practical instruction in the healing art. *Clinical medicine* is the practice of medicine on patients in hospitals, or in bed. And the term *clinic* was also applied by the ancient church historians, to one who received baptism on his death bed.

CLOA'CA, an ancient common sewer.

CLOCK, a machine for measuring time, called, when first invented, a nocturnal dial, to distinguish it from the sun-dial. This machine consists of wheels moved by weights, so constructed that by a uniform vibration of a pendulum, the hours, minutes, and seconds are measured with great exactness; and it indicates the hour by the stroke of a small hammer on a bell. The invention of clocks has been ascribed to Boethius, about the year 510; but clocks, like those now used, were either first invented, or revived, between two and three centuries ago. The clock measures even 24 hours, but the solar day is unequal, according to the situation of the earth in its orbit, and to the declination of the sun. Hence the clock is sometimes a few minutes faster or slower than the sun.

CLOISTER, the principal part of a regular monastery, consisting of a square, erected between the church, the chapter-house, and the refectory, and over which is the dormitory. In a general sense, *cloisters* mean covered passages, such as were formerly attached to religious houses.

CLOTH, any kind of stuff that is woven or manufactured in the loom, whether it be made of wool, hemp, flax, or cotton.

CLOTHING. Under this head we shall take the liberty of extracting and abridging from the Glasgow edition of the "Conversations Lexicon," a few paragraphs which strike us as being founded on careful observation, and given with a just notion of the importance of the subject. Nothing is more necessary to a comfortable state of existence, than that the body should be kept in nearly a uniform temperature. The chief end proposed by clothing ought to be protection from the cold; and it never can be too deeply impressed on the mind (especially of those who have the care of children), that a degree of cold amounting to shivering cannot be felt, under any circumstances, without injury to the health, and that the strongest constitution cannot resist the benumbing influence of a sensation of cold constantly present, even though it be so moderate as not to occasion immediate complaint, or to induce the sufferer to seek protection from it. This degree of cold often lays the foundation of the whole host of chronic diseases, foremost amongst which are found scrophula and consumption. Persons engaged in sedentary employments must be almost constantly under the influence of this degree of cold, unless the apartment in which they work is heated to a degree that subjects them, on leaving it, to all the dangers of a sudden transition, as it were, from summer to winter. The inactivity to which such persons are condemned, by weakening the body, renders it incapable of maintaining the degree of warmth necessary to comfort, without additional clothing or fire. To heat the air of an apartment much above the ordinary temperature of the atmosphere, we must shut out the external air; the air also becomes extremely rarefied and dry; which circumstances make it doubly dangerous to pass from it to the cold, raw, external air. But in leaving a moderately well-warmed room, if properly clothed, the change is not felt; and the full advantage of exercise is derived from any opportunity of taking it that may occur. The only kind of dress that can afford the protection required by the changes of temperature to which high northern climates are liable, is *woollen*; and those who would receive the advantage which the wearing of woollen is capable of affording, must wear it next the skin; for it is in this situation only that its health-preserving power can be felt. The great advantages of woollen cloth are briefly these:—the readiness with which it allows the escape of the matter of perspiration through its texture; its power of preserving the sensation of warmth to the skin under all circumstances; the slowness with which it conducts heat; and the softness, lightness, and pliancy of its texture. *Cotton cloth* must be esteemed the *next best* substance of which clothing can be made; but *linen* is the *worst* of all the substances in use."

CLOUD, a collection of vapours suspended in the atmosphere; being a congeries chiefly of watery particles, drawn up from the sea and land by the solar or subterraneous heat, or both, in vapour. Clouds are of various kinds according to the prevalence of any one of their component parts, and particularly according to the quantity of electric fluid they contain. Massive round clouds are called *cumulus;* flat long clouds



A WATCH DIFFERS FROM A CLOCK PRINCIPALLY IN THIS, THAT IT HAS A VIBRATING WHEEL INSTEAD OF A VIBRATING PENDULUM.

BY INDEFINITELY INCREASING THE NUMBER OF WHEELS, A TIME-PIECE MIGHT BE MADE TO GO FOR MANY CENTURIES.

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COC'CULUS IN'DICUS, an Indian berry, growing on the *Menispermum Cocculus*. It is often unlawfully used as a deleterious ingredient in making malt liquors.

COC'CUS, in entomology, a genus of two-winged insects, the wings of which stand erect, and are only to be found in the males; the rostrum, or trunk, arises from the breast, and the body is setose behind.

COCHINEAL', the *Coccus Cacti*, an insect which infests different plants, but particularly the Nopal or Indian fig-tree. At a suitable time, these insects are taken and put in a pot, where they are confined for some time, and then killed by the application of heat. When formed into a mass, or drug, they become the *cochineal* of the shops, which is used in dyeing crimson and scarlet colours, and for making carmine.

COCH'LEA, the SNAIL-SHELL, a genus of univalve shell-fish, of a spiral figure, and containing only one cell. This is a very comprehensive genus, and therefore subdivided into three series.——*Cochlea*, in anatomy, the internal cavity of the ear; so called from its resemblance to the spiral shape of a snail's shell.

COCHLEA'RIA, in botany, a genus of plants, class 15 *Tetradynamia*, order 1 *Siliculosa*. The species chiefly consist of the various kinds of scurvy grass.

COCK, *(gallus)*, in ornithology, the male of gallinaceous or domestic fowls, but more especially used for the common dunghill-cock.——An instrument to draw out liquor from a cask, &c.——The part of a musket to which a flint is attached, and by which fire is struck.

COCK-CHA'FER, known also by the name of *May-bug, door beetle*, &c., a species of coleopterous insect, the *Scarabæus melolontha* of Linnæus, is remarkable for the length of its life in the grub or larva state, and for the injury it does to vegetation. The grub remains in the earth for three years before it is transformed into the perfect insect, and is very destructive to the roots of plants.

COCK'ET, a seal belonging to the custom-house: likewise a scroll of parchment, sealed and delivered by the officers of the custom-house to merchants, as a warrant that their merchandize is entered.

COC'KLE, the *Cardium* of Linnæus, a genus of shells the characteristics of which are: shells nearly equilateral and equivalvular; hinge with two small teeth; and prominent ribs running from the hinge to the edge of the valve.

COCK'-PIT, in ships of war, an apartment situated near the after-hatchway, under the lower gun-deck, in which the wounded men are dressed. The fore-cock-pit is a place leading to the magazine passage and the store-room of the boatswain, gunner, and carpenter.

COCK'-ROACH, in entomology, the *Blatta* of Linnæus, a disagreeable and annoying insect, which haunts houses, and is very active by night, when it devours whatever food may lie in its way, and is also very destructive to woollen cloths, &c.

COCK'SWAIN, (contracted into *Coxen*) an officer who has charge of the boat and the boat's crew.

CO'COA, a tree belonging to the genus *Cocos*, of the order of *Palmæ*. It grows in both the East and West Indies, is about sixty feet in height, and produces the fruit called the cocoa-nut, the shell of which is of a woody substance, containing a white fleshy kernel and a sweet refreshing liquor. The nuts, which are from three to seven inches long, hang in clusters on the top of the tree. If the body of the tree be bored, there exudes from the wound a white liquor called palm wine or toddy; the kernels yield a considerable quantity of oil, which is now made available in the manufacture of candles and soap; the leaves are wrought into sacks, hammocks, &c.; and the filaments of the outer coat of the nut are made into cables.

CO'COA, as it is generally called, but more properly CACA'O, or the Chocolate-tree, is a species of the *Theobroma*, growing in the West Indies and many parts of South America. The nuts or seeds, which are numerous, are contained in pods, much resembling a cucumber, that proceed from all parts of the body and larger branches; each pod containing from 20 to 30 nuts, about the size of an almond, and very compactly set. They yield by expression a great deal of oil; but they are cultivated only that they may be employed in the preparation of that excellent beverage cacao, and the manufacture of chocolate, of which they form the principal ingredient.

COCOON', the fibrous or silken cone which caterpillars weave around themselves when they assume the pupa or chrysalis form.

CO'COS, a genus of plants, class 20 *Monœcia*, order 6 *Hexandria*. The species are shrubs and trees bearing large nuts, as the *cocos nucifera*, &c.

COC'TION, in medicine, the reducing aliments to chyle. In surgery, the reducing morbific matter to a healthy state.

COC'ULA, in archæology, a small drinking-cup in the shape of a boat.

COD, or COD-FISH, in ichthyology, the English name of the variegated *gadus*, with three fins on the back, a cirrated mouth, and the upper jaw longest. It inhabits the northern seas, particularly the banks of Newfoundland.

CODE, (from *codex*, a roll or volume), a collection or system of laws. The collection of laws and constitutions made by order of the emperor Justinian is distinguished by the appellation of *code* by way of eminence.——The *Code Napoleon*, or *civil code* of France, proceeding from the French revolution, and the administration of Napoleon while consul, effected great changes in the laws of France. It was a work of great magnitude, and will remain a perpetual monument of the state of things as they then existed in that country.

COD'ICIL, a supplement to a will, containing anything which the testator wishes





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COL'CHICUM, or Meadow Saffron, is a bulbous-rooted plant, which grows in various parts of Europe, and which of late years has become quite noted as a remedy for the gout. It should, however, be used with great caution.

COL'COTHAR, called also *crocus martis*, an impure brownish-red oxyde of iron, which remains after the distillation of the acid from the sulphate of iron. It is used in polishing glass and metals. The best sort of polishing powder, called *jewellers' red rouge* or plate powder, is the precipitated oxyde of iron prepared by adding solution of soda to solution of copperas, washing, drying, and calcining the powder in shallow vessels with a gentle heat, till it assumes a deep brown-red colour.

COLD, the sensation produced in animal bodies by the escape of heat, or that which accompanies a transition of the fine vessels of the human body from an expanded to a more contracted state. Great degrees of cold are produced by mixing together substances which dissolve rapidly. The reason of this will appear when it is recollected that in the conversion of solid bodies into fluids caloric is always absorbed. Mixtures to produce artificial cold are generally made of neutral salts and of snow: or of neutral salts, diluted acids, and powdered ice.—— The word *cold* is also in common use, to express that indisposition occasioned by a sudden transition from heat to cold; viz., *catarrh*.

COLEOPTERA, the first order of insects in Linnæus' zoological system, which includes all those whose wings are guarded by a pair of strong, horny, exterior cases or coverings, under which the wings are folded up when at rest. In common language these insects are called *beetles*; and the order contains an immense number.

COLEWORT, a well-known variety of the cabbage, or *brassica* of Linnæus, which grows through the winter.

COLIC, an appellation given to almost all pains in the abdomen indiscriminately; but it is chiefly known as that disease which is characterised by a spasmodic sensation in the intestines, bilious vomiting, and obstinate costiveness.

COLIPHIUM, in antiquity, a sort of coarse bread which wrestlers used to eat in order to make them strong and muscular.

COLISE'UM, an elliptical amphitheatre, at Rome, built by Vespasian, in which were statues representing all the provinces of the empire, and in the middle stood that of Rome, holding a golden apple in her hand. This immense structure was 1612 feet in circumference, contained eighty arcades, and would hold 100,000 spectators. Down to the 13th century, this unrivalled monument of ancient grandeur remained almost uninjured; afterwards pope Paul II. took all the stones from it which were used for the construction of the palace of St. Mark, and in later times some other palaces were erected from its fragments. At present, care is taken not to touch the ruins of the Coliseum, but it is gradually crumbling away of itself, and in a few centuries, perhaps, nothing more may be seen of its upper part; the lower part, however, may safely bid defiance to the ravages of time. Benedict XVI. caused a cross to be erected in the centre of the arena, where every Sunday afternoon, Catholic worship is performed. The great object of this magnificent building was to exhibit the brutal spectacles of the gladiators contending with wild beasts. We accordingly read, that on the triumph of Trajan over the Dacians, 11,000 animals were killed in the amphitheatres at Rome; and 1000 gladiators fought during 123 days. The gladiators at first were malefactors, who fought for victory and life; or captives and slaves, who were made to fight for their freedom; but after a time many lived by it as a profession; and these exhibitions continued, with modifications, for above 500 years.—— A very large and most ingeniously constructed building, erected in the Regent's Park, London, is called the Coliseum, or Colosseum. It is divided into three parts, viz. a grand panorama of London, suites of rooms for various kinds of entertainments, and a handsome conservatory. The grand panorama affords many points of view of the vast metropolis, by the ascent of a winding staircase; but for people who would enjoy the sight without the trouble of walking up, an ascending room is provided. It is altogether a wonderful performance, and for extent and accuracy is unrivalled.

COLIUS, in ornithology, the Coly, a genus of birds, order *Passeres*. They inhabit the Cape of Good Hope and Senegal.

COLLAPSE, to close by falling together; as, the fine canals or vessels of the body *collapse* in old age; or, as a balloon collapses when the gas escapes from it.

COL'LAR, in Roman antiquity, a chain put round the neck of slaves that had run away, after they were taken.——In a modern sense, it denotes an ornament consisting of a chain of gold, enamelled, &c., frequently set with ciphers or other devices, with the badge of the order hanging at the bottom, and worn by the knights of several military orders over their shoulders.

COLLATERAL, in genealogy, signifies descending from the same stock or ancestor, but not in a direct line; and is therefore distinguished from *lineal*.——*Collateral security*, in law, is security for the performance of covenants on the payment of money, besides the principal security.

COLLATION, in the canon law, the presentation to a benefice, by a bishop, who has it in his own gift or patronage. When the patron of a church is not a bishop, he presents his clerk for admission, and the bishop institutes him; but *collation* includes both presentation and institution. ——Collation, in law, the comparison of a copy with its original, to ascertain its conformity; or the report of the officer who made the comparison. Hence, a Collator means one who compares copies or





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quake. When the Saracens became possessed of Rhodes, they found the statue in a prostrate state, and sold it to a Jew, by whom 900 camels were laden with the materials.

COL'OUR, in physics, a property inherent in light, (formerly supposed to be inherent in the coloured substance), which by a difference in the rays and the laws of refraction, gives to bodies particular appearances to the eye. The principal colours are red, orange, yellow, green, blue, indigo, and violet. White is not properly a colour; as a white body reflects the rays of light without separating them. Black bodies, on the contrary, absorb nearly all the rays, and therefore black is no distinct colour. But in common discourse, white and black are denominated colours; and all the colours admit of many shades of difference.——*Colours*, in painting, the various tints which are produced by the different mixture and application of certain colouring substances.——*Colours*, in heraldry, the tinctures with which the field or any part of the escutcheon is distinguished: they are red, blue, black, green, and purple; which the heralds call *gules*, *azure*, *sable*, *vert*, and *purpure*. Tenne or tawny, and sanguine, are not so common. The yellow and white, called *or* and *argent*, are metals, not colours. The metals and colours are sometimes expressed in blazon by the names of precious stones, and sometimes by those of planets or stars.——*Colours* in military affairs, include the banners, flags, ensigns, &c. of all kinds, borne in the army or fleet.

COL'UBER, in zoology, the Viper, a very numerous genus of serpents, distinguished by the belly being covered with a number of scuta, or hard crusts, and the tail with scales. The *Coluber ferus* is found in most parts of Europe; it lives in woods and thickets, and, in breeding time, in the open fields: it is poisonous, but not deadly; it grows to a foot and a half long. The flesh was formerly used in medicine as a restorative. The poisonous matter discharged is a real gum, and perhaps the only gum actually produced and secreted by animals of any kind. Olive oil is the most successful application to the bite of a viper.

COLUM'BIAN, an epithet for anything pertaining to America, from its having been discovered by Columbus.

COL'UMBINE, in botany, a genus of plants of several species. Also the name of the heroine in a pantomime.

COLUM'BIUM, the name of a metal first discovered in an ore or oxyde, in Connecticut.

COL'UMN, in architecture, a cylindrical pillar, or long round body of wood, stone, or iron, which serves either for the support or ornament of a building. It consists of a capital, which is the top or head; the shaft, which is the cylindrical part; and the base, or that on which it rests. Columns are distinguished as to their form into the Tuscan, Doric, Ionic, Corinthian, and Composite. The Tuscan is characterized by being rude, simple and massy; the Doric is next in strength and massiveness to the Tuscan; the Ionic is more slender than the Tuscan and Doric; the Corinthian is more delicate in its form and proportions, and enriched with ornaments; and the Composite is a species of the Corinthian. In strictness, the shaft of a column consists of one entire piece; but it is often composed of different pieces, so united as to have the appearance of one entire piece.——The word COLUMN has also many other meanings; as, a division of a page, which may contain two or more *columns*. A large body of troops drawn up in order; as, a solid *column*. Any body pressing on its base, and of the same diameter as its base; as, a *column* of water, air, or mercury.

COLUMEL'LA, in botany, the central pillar in a capsule, which connects the inside with the seeds, and has the seeds fixed to it all round.——In conchology, the upright pillar in most of the univalve shells.

COLUM'NA, in anatomy, a term applied to different parts: thus the *columna nasi*, is the lowest and fleshy part of the nose which forms a part of the septum; and the *columna oris*, is the same with the uvula.

COLUMNIF'ERÆ, the 37th Linnæan natural order of plants, whose stamens and pistil resemble a pillar in the centre of a flower.

COLU'RES, in astronomy, two great circles supposed to intersect each other at right angles in the poles of the world, and to pass through the solstitial and equinoctial points of the ecliptic. They are hence called the solstitial and equinoctial colures.

CO'MA, or COMA-VIGIL, a preternatural propensity to sleep, or lethargic drowsiness. It is a symptom which often attends acute, burning, and malignant fevers.——*Coma somnolentum*, is when the patient continues in a profound sleep, and when awaked, immediately relapses, without being able to keep open his eyes.——*Coma Berenicis*, in astronomy, a constellation of the northern hemisphere composed of stars near the tail of Leo.——The word *Coma* also denotes the hairy appearance that surrounds a comet, when the earth is between the comet and the sun.

COMA'TA, in medicine, an order of diseases in the class *Neuroses* in Cullen's system, consisting of those disorders in which the power of voluntary motion is suspended.

COMBINA'TION, in chemistry, denotes the intimate union of two or more bodies of different natures, from which a new compound results, differing in its nature from either of the constituents. Thus, an acid united with an alkali, gives a neutral salt, and furnishes a good instance of combination.—— *Combination*, in mathematics, is the variation or alteration of any number of quantities, letters, sounds, or the like, in all the different manners possible.——The word *combination* in its general and most popular sense, is equivalent to league or to conspiracy; and may accordingly be used



THE FLAME OF COMBUSTIBLE BODIES MAY BE CONSIDERED AS THE COMBUSTION OF AN EXPLOSIVE MIXTURE OF GAS WITH AIR.

THE SMOKE OF A FIRE IS THE HYDROGEN OF THE COAL RISING IN COMBINATION WITH A PORTION OF CARBON.

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IN CONSEQUENCE OF THE UNION WITH IRELAND, IN 1801, ONE HUNDRED IRISH MEMBERS WERE ADDED TO THE BRITISH PARLIAMENT.

BY THE REFORM BILL OF 1832, THE NUMBER OF MEMBERS WAS 500 FOR ENGLAND AND WALES, 53 FOR SCOTLAND, AND 105 FOR IRELAND.

tion to the most remote corners of the earth: enlarges the powers and faculties of the mind; and advances human knowledge by the improvements which it carries into every art and science. On the other hand, it cannot be denied that it has contributed to unjust aggressions, and that the peace and welfare of man have often been made subservient to commercial avarice. Yet much as the evils attributed to commerce have been deplored by some moral writers, we cannot but adopt the sentiments of one who says, "To commerce, with all its mischiefs, with all its crimes, committed upon every shore, its depopulation of fields, and corruption of cities, to commerce we must attribute that growing intimacy between the members of the human race from which great benefits have redounded, and greater still may spring."

COM'MISSARY, in a general sense, one who is sent or delegated to execute some office or duty, as the representative of his superior.——In military affairs, an officer, who has the charge of furnishing provisions, clothing, &c. for an army. There are various separate duties devolving on commissaries, and they have names accordingly: as, the *commissary-general*, who is at the head of the department; *deputy-commissaries*, &c.——In ecclesiastical law, an officer of the bishop who exercises spiritual jurisdiction in distant parts of the diocese.

COMMISSA'RIATE, the whole body of officers in the commissary's department.

COMMI'SSION, in law, the warrant, or letters patent by which one is authorized to exercise jurisdiction.——In military affairs, the warrant or authority by which one holds any post in the army: in distinction to the inferior or non-commissioned officers.——In commerce, the order by which any one traffics or negotiates for another; also the per centage given to factors and agents for transacting the business of others.

COMMI'SSIONER, a person authorised by commission, letters-patent, or other lawful warrant, to examine any matters, or execute any public office, &c.

COM'MISSURE, in anatomy, any suture or juncture, particularly the corners of the lips where they meet together; and also certain parts of the brain.

COMMIT'MENT, is the sending a person to prison by warrant or order, either for a crime or contumacy.

COMMITTEE, certain persons elected or appointed, to whom any matter or business is referred, either by a legislative body, or by any corporation or society.——A *Committee of Parliament*, signifies a certain number of members appointed by the house to proceed on some specific business. The whole house frequently resolves itself into a committee, in which case, each member has a right to speak as often as he pleases. When the house is not in committee, each gives his opinion regularly, and is only allowed to speak once, unless to explain himself.——*Standing committees* are such as continue during the existence of the legislature. *Special committees* are appointed to consider and report on particular subjects.

COMMOD'ITY, in commerce, any merchandize which a person deals in.——*Staple commodities*, such wares and merchandizes as are the proper produce or manufacture of the country.

COM'MODORE, an officer in the British navy, invested with the command of a detachment of ships of war destined for a particular purpose.——The *Commodore of a convoy* is the leading ship in a fleet of merchantmen, and carries a light in her top to conduct the other ships.

COM'MON, a tract of ground, or open space, the use of which is not appropriated to an individual, but belongs to the public, or to a number. The right which a person has to pasture his cattle on land of another, or to dig turf, or catch fish, or cut wood, or the like, is called *common* of pasture, of turbary, of piscary, and of estovers.

COMMON PRAY'ER, the liturgy, or public form of prayer prescribed by the church of England to be used in all churches and chapels, and which the clergy are enjoined to use, under a penalty.

COMMON COUN'CIL, the council of a city or corporate town, empowered to make by-laws for the government of the citizens. It is generally used in speaking of a court in the city of London, composed of the lord mayor, aldermen, and a certain number of citizens called common-councilmen. The city of London is divided into 24 wards; the chief magistrate of each ward has the title of alderman; the 24 aldermen, with the lord mayor, form the court of aldermen; and certain inhabitants chosen out of each ward, for the purpose of assisting the aldermen with their advice in public affairs, form the court of *common council*.

COMMON-HALL', a court in the city of London, at which all the citizens, or such as are free of the city, have a right to attend.

COMMON LAW, the law that receives its binding force from immemorial usage and universal reception, in distinction from the *written* or statute law; and which chiefly originated in judicial decisions founded on natural justice and equity, or on local customs.

COMMON-PLACE BOOK, a register of such thoughts and observations as occur to a person of reading or reflection.

COMMON-PLEAS', one of the superior courts at Westminster-hall, where pleas or causes are heard between subject and subject. A writ of error, in the nature of an appeal, lies from this court to the court of Queen's Bench.

COM'MONS, the lower house of Parliament, consisting of the representatives of cities, boroughs, and counties, chosen by men possessed of the property or qualifications required by law. This body is called the *House of Commons*; and may be regarded as the basis of the British constitution. The origin of this assembly ought, perhaps, to be attributed to the necessity under which the



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BY THE AID OF THE MARINER'S COMPASS, THE WHOLE WORLD HAS BEEN BROUGHT TOGETHER, AND BECOME ONE VAST COMMERCIAL COMMONWEALTH.

utility of this instrument results from the magnetic virtue of the needle, through which it constantly places itself in a direct line from pole to pole; a small declination peculiar to various parts of the world excepted.——*A pair of compasses*, an instrument used in describing circles, measuring figures, &c., consisting of two pointed legs or branches, made of iron, steel, or brass, joined at the top by a rivet, on which they move. There are also compasses of three legs, cylindrical, spherical, compasses, &c.

COMPENSA'TION, in civil law, a sort of right, whereby a person, who has been sued for a debt, demands that the debt may be compensated with what is owing him by the creditor, which, in that case, is equivalent to payment.——*Compensation balance*, in a watch, is a contrivance by means of which the errors occasioned by the variation of temperature may be corrected by varying the diameter of the balances.

COMPERTO'RIUM, a judicial inquest in the civil law, made by delegates or commissioners, to find out and relate the truth of a cause.

COM'PLEMENT, in astronomy, the distance of a star from the zenith; or the arch comprehended between the place of the star above the horizon, and the zenith.——*Complement of an Arc*, in geometry, what an arc wants of 90 degrees, or the quadrant of a circle; thus the complement of forty degrees is fifty.——The word is also used to denote the full or complete number; as, a company has its *complement* of men.

COM'PLEX TERMS, and COMPLEX IDEAS, in logic, are such as are compounded of several simple ones.

COMPLEX'ION, among physicians, the temperament, habitude, and natural disposition of the body; but, in general use, the word means the colour of the skin.

COMPO'SING, that branch of the art of printing which consists in taking the types or letters from the cases, and arranging them in such an order as to fit them for the press. The instrument in which they are adjusted to the length of the lines is called a *composing-stick*.

COMPOSI'TÆ, the 21st natural order in the Linnæan botanic system, comprehending the plants with compound flowers, as the dandelion, sun-flower, &c.

COMPOSITE ORDER, in architecture, the last of the five orders of columns; so called because its capital is *composed* out of those of the other columns. It is also called the Roman or Italic order, from having been invented by the Romans. It is generally ranked after the Corinthian, either as being the next richest, or the last invented.

COMPOSITE NUMBERS, such numbers as can be measured exactly by a number exceeding unity, as 6 by 2 or 3; so that 4 is the lowest composite number. Composite numbers between themselves, are those which have a common measure besides unity; as 12 and 15, both which are measured by 3.

COMPOSI'TION, in a general sense, the putting together, and uniting of several things, so as to form of the whole one mass or compound.——*Composition of ideas*, an act of the mind, whereby it unites several simple ideas into one conception, or complex idea.——In literature, the act of inventing or combining ideas, furnishing them with words, arranging them in order, and committing them to writing.——In logic, a method of reasoning, whereby we proceed from some general self-evident truth, to other particular and singular ones. This method of reasoning is opposed to *analysis*, which begins with first principles, and, by a train of reasoning from them, deduces the propositions or truths sought; but *composition* or *synthesis* collects the scattered parts of knowledge, and combines them into a system, so that the understanding is enabled distinctly to follow truth through its different stages of gradations. ——In music, the art or act of forming tunes, either to be performed vocally or instrumentally.——In painting, the putting together the several parts of a picture, so as to set off the whole to the best advantage. ——In commerce, an agreement entered into between an insolvent debtor and his creditor, by which the later accepts a part of the debt in compensation for the whole. ——In chemistry, the combination of different substances, from which results a compound substance differing in properties from either of its component parts. Thus water is a composition of hydrogen and oxygen, which are invisible gases.——*Composition of motion*, is an assemblage of several directions of motion, resulting from several powers acting in different though not opposite directions.

COM'POST, in husbandry, several sorts of soils or earths and other matters mixed together, in order to make a particularly fine kind of mould for fertilizing land.

COM'POUND, a term in botany, variously applied. Thus, a *compound flower* consists of several distinct florets, inclosed in a common receptacle: a *compound stem* is one that divides into branches: a *compound leaf* connects several leaflets in one petiole; a *compound umbel* is one which has all its rays or peduncles bearing small umbels at the top.——In computation, *compound interest* is interest upon interest; when the interest of a sum is added to the principal, and then bears interest.——In algebra, *compound quantities*, are such as are joined by the signs + and —, plus and minus, and expressed by more letters than one, or by the same letters unequally repeated: thus $a+b-c$, and $bb-b$, are compound quantities.

COMPRESSIBILITY, in physics, that property in a solid or fluid of yielding to the pressure of another body or force, so as to be brought into a smaller compass.

COMPRESSION, in surgery, a diseased state of the system, arising from the pressure of something on the brain.

CONCATENATION, a term chiefly used in speaking of the mutual dependence of second causes upon each other.

LORD BACON SAYS, THAT TEARS ARE THE EFFECTS OF THE "COMPRESSION" OF THE MOISTURE OF THE BRAIN, UPON DILATATION OF THE SPIRITS.



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CONDENSATION, the act whereby a body is rendered more dense, compact, and heavy. Hence condensation stands opposed to dilatation or rarefaction.

CONDENS'ER, a pneumatic machine by which a volume of air may be reduced into a much smaller space.

CONDI'TION, in law, a clause in a bond or other contract containing terms or a stipulation that it is to be performed, and in case of failure, the penalty of the bond is to be incurred.——We speak of a good *condition* in reference to wealth and poverty, or to health and sickness, &c. Or, we say, —a nation with an exhausted treasury is not in a *condition* to make war; religion affords consolation to man in every *condition* of life.——*Conditional propositions*, in logic, such as consist of two parts connected together by a conditional particle. ——*Conditional syllogism*, a syllogism where the major is a conditional proposition.

CON'DOR, an extremely large kind of vulture, measuring with the wings extended from twelve to sixteen feet. It preys on birds, lambs, or kids, and has strength to bear off a calf. It is a native of South America.

CONDUC'TOR in electrical experiments, a term used to denote those substances which are capable of receiving and transmitting electricity, in opposition to electrics, in which the electric fluid may be excited or accumulated. If a conductor received or imbibed the electrical action, it would be like a water-pipe made of absorbing material; but every surface is a conductor, exactly in the proportion in which its parts do not receive and exhaust the electrical action.——Bodies which repel it, or into which it will not pass, are called *non-conductors*.——CONDUCTOR OF LIGHTNING, a pointed metallic rod fixed to the upper parts of buildings to secure them from the effects of lightning.

CON'DUIT, a subterraneous or concealed aqueduct. The ancient Romans excelled in them, and formed the lower parts, whereon the water ran, with cement of such an excellent quality, that it has become as hard as the stone itself which it was employed to join.——*Conduits*, in modern times, are generally pipes of wood, iron, or pottery, for conveying the water from the main spring, or reservoirs, to the different places where it is required.

CONDU'PLICATE, in botany, an epithet for that which is doubled or folded over or together; as the leaves of a bud.

CON'DYL, in surgery, a protuberance on the end of a bone; a knuckle.

CON'DYLOID, in anatomy, the projecting soft end, or process of a bone.——The *condyloid process* is the posterior protuberance at the extremities of the under jaw; an oblong rounded head, which is received into the fossa of the temporal bone, forming a moveable articulation. The anterior is called the *coronoid process*.

CONE, in geometry, a solid figure having a circle for its base, and its top terminating in a point or vertex, like a sugar-loaf.—— A *right cone*, is when its axis is perpendicular to its base, and its sides equal. It is formed by the revolution of a right-angled plane triangle about one of its sides.—— *Cone*, in botany, the fruit of several evergreen trees, as of the fir, cedar, cypress; so called from its conical shape. It is composed of woody scales that are usually open, each of which has a seed at the end.——In conchology, a beautiful sort of shell inhabited by the limax. Shells of this sort mostly bear the highest price of any, one species being valued as high as a hundred pounds.

CONFARREATION, in antiquity, a ceremony observed by the Romans in their nuptial solemnities. It consisted in the offering up some pure wheaten bread, and rehearsing at the same time a certain formula in presence of the high-priest and at least ten witnesses.

CONFECTION, a sweetmeat or anything prepared with sugar: it also signifies a liquid or soft electuary, of which there are various sorts.

CONFEC'TOR, an officer in the Roman games, whose business was to kill any beast that was dangerous.

CONFED'ERACY, in law, a combination of two or more persons to do some damage or injury to another, or to commit some unlawful act.

CONFEDERATION, a league, or compact, for mutual support, particularly of princes, nations, or states.

CONFERVA, in botany, a genus of plants of the *cryptogamia* class; consisting of oblong, capillary filaments, divided into joints of a globular figure.

CONFES'SION, in a legal sense, the acknowledgment of something prejudicial to the person making the declaration. A confession, according to law, must never be divided, but always taken entire; nor must a criminal be condemned upon his own confession, without other concurring proofs. ——In theology, a public declaration of one's faith, or the faith of a public body. Also a part of the Liturgy, in which an acknowledgment of guilt is made by the whole congregation.——*Auricular confession*, a private confession or acknowledgment of one's sins made by each individual in the Romish church to the priest or father confessor. It is so called because it is made by whispering in his ear.——Among the Jews, it was a custom, on the annual feast of expiation, for the high priest to make confession of sins to God in the name of the whole people.

CONFES'SOR, a Roman catholic priest, who hears confessions, and is empowered to grant absolution to those who confess.—— The seat, or cell, wherein the priest or confessor sits to hear confessions, is called the *confessional*.

CONFIGURATION, in astrology, the aspects of the planets at a certain time, by which they are pretended to aid or oppose each other.

CONFIRMATION, the act or ceremony in the Christian church of laying on of hands, by which baptized persons are confirmed in their baptismal vows. This cere-



SOOT ACTS AS A "CONDUCTOR" FOR LIGHTNING; THE FIRE-SIDE IS THEREFORE AN UNSAFE PLACE DURING A THUNDER-STORM.

A COPPER ROD IS A BETTER MATERIAL FOR A "LIGHTNING CONDUCTOR" THAN ONE OF IRON, FROM ITS BEING LESS LIABLE TO FUSION.

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three classes, so that one-third thereof is, or may be, changed by a new election every second year. No person can be a senator who is not thirty years of age, and has not been nine years a citizen of the United States, and is not, when elected, an inhabitant of the state for which he is chosen. The times, places, and manner of holding elections for senators and representatives, are appointed by the state legislatures. Each house determines the rules of its own proceedings, and has power to punish its members for disorderly conduct. Neither house, during the session of congress, can, without the consent of the other, adjourn more than three days, nor to any other place than that in which the two houses shall be sitting. The senators and representatives are entitled to receive a compensation, provided by law, for their services, from the treasury. They are also privileged from arrests, except in cases of treason, felony, or breaches of the peace, during their attendance at the session of their respective houses, and in going to and returning therefrom. The foregoing outline of their duties and privileges may be sufficient for the general reader, if to it we add, that the rules and practice of the British House of Commons form the basis of their proceedings, modified from time to time, as each house deems fit.

CON'GREVE ROCKET, so named from its inventor, the late Sir W. Congreve, is a formidable weapon of destruction, consisting of a tubular case of copper or iron, filled with combustibles, which are impelled with resistless force against the hostile ranks of an army, or the walls of a fortress. The Congreve rockets were first used in the attack of Boulogne in 1806. The *carcass rockets*, as those for bombardment are called, are armed with strong iron conical heads, pierced with holes, and containing a substance as hard and solid as iron itself, which, when once inflamed, is inextinguishable, and scatters its burning particles in every direction. When this substance is consumed, the ball explodes like a grenade. The rocket is projected horizontally, and whizzes loudly as it flies through the air. They were at first considered a most important invention, but experience has shewn that in the field they are much less efficient than the common artillery, and in sieges do less injury than red-hot shot and bombs.

CON'IC SECTIONS, in geometry, such curve lines as are produced by the mutual intersections of a plane and the surface of a solid cone. In different positions of the plane there arise five different figures or sections, viz. the triangle; the circle; the ellipse; the parabola; and the hyperbola: the last three are peculiarly called Conic Sections; to investigate the properties of which is the business of *Conics*, and this depends on a knowledge of geometry plane and solid.

CONIF'ERÆ, the 51st Linnæan natural order of plants, with cone-shaped flowers, as the fir, juniper, &c. Hence the term *coniferous* is applied to all trees bearing cones.

CONISSA'LÆ, an old term for a class of fossils, naturally and essentially compounded, not inflammable, nor soluble in water, found in detached masses, and formed of crystaline matter debased by earth.

CO'NITE, a mineral of an ash or greenish gray colour, which becomes brown by exposure to the air. It occurs massive or stalactitic; and is found in Saxony and Iceland.

CO'NIUM, HEMLOCK, in botany; a genus of plants, class 5 *Pentandria*, order 2 *Digynia*; the flower of which is compound; the particular ones consisting of five unequal and cordated petals.

CON'JUGATE, in botany, an epithet for a pinnate leaf, which has only one pair of leaflets.——In geometry, a *Conjugate axis* is that which crosses another axis.——*Conjugate diameter*, the shortest axis of an ellipsis.——*Conjugate hyperbolas*, hyperbolas having the same axis, but in contrary order.

CONJUGATION, in anatomy, is applied to a pair of nerves arising together, and serving the same operation, sensation, and motion.——*Conjugation*, in grammar, the distribution of the several inflections or variations of a verb, in their different voices, moods, tenses, numbers, and persons.

CON'JUGAL RIGHTS. The restitution of conjugal right is a species of matrimonial suit, which may be brought either by the wife or husband against the party who is living in a state of separation.

CONJUNC'TION, in astronomy, the meeting of two or more stars or planets, in the same degree of the zodiac. Conjunction is either true or apparent. *True conjunction* is when a right line, drawn from the eye through the centre of one of the bodies, would pass through that of the other. *Apparent conjunction*, is when the two bodies do not meet precisely in the same point, but are joined with some latitude. The moon is in conjunction with the sun, when they meet in the same point of the ecliptic, which happens every month; and eclipses of the sun are always occasioned by the conjunction of the sun and moon in or near the nodes of the ecliptic.——*Conjunction*, in grammar, an undeclinable word, or particle, which serves to join words and sentences together.

CON'NATE, in botany, an epithet for leaves, filaments, and anthers: thus *folium connatum*, two leaves so united at their bases as to have the appearance of one leaf, as in the garden honeysuckle.

CONNI'VENT, in botany, an epithet denoting closely united or converging together.——*Connivent valves*, in anatomy, those wrinkles, cellules, and vascules, which are found in the inside of the two intestines, *ilium* and *jejunum*.

CO'NOID, in geometry, a solid formed by the revolution of a conic section about its axis.——In anatomy, a gland found in the third ventricle of the brain called *pin-*



CONGREVE ROCKETS HAVE OFTEN BEEN MADE SUBSERVIENT TO THE CAUSE OF HUMANITY, IN CASES OF SHIPWRECK NEAR THE COAST.

POMPEY AND CÆSAR WERE TWO STARS OF SUCH MAGNITUDE, THAT THEIR "CONJUNCTION" WAS AS FATAL AS THEIR OPPOSITION.

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not in tubs or pots, as in the common greenhouse.——In various parts of Italy and France there are musical schools, called *conservatories*, which are expressly intended for the scientific cultivation of musical talents, and from which many first-rate composers, as well as vocalists, have attained their proficiency.

CON'SERVE, in pharmacy, a form of medicine contrived to save the flowers, herbs, roots, fruits, or simples, as nearly as possible in their natural fresh state.

CONSIDERA'TION, in law, the material cause or ground of a contract, without which the party contracting would not be bound. A consideration is either express or implied; *express*, when the thing to be given or done is specified; *implied*, when no specific consideration is agreed upon, but justice requires it, and the law implies it: as when a man labours for another, without stipulating for wages, the law infers that he shall receive a reasonable *consideration*.

CONSI'GNMENT *of goods*, in commerce, is the delivering or making them over to another: thus, goods are said to be consigned to a factor, when they are sent to him for sale, &c. He who consigns the goods is called the *Consignor*; and the person to whom they are sent is the *Consignee*.

CONSISTENCE, or CONSISTENCY, that state of a body in which its component parts remain fixed. Also, congruity and uniformity in opinions and actions.

CONSISTO'RIUM, in antiquity, a council-house, or place of audience.

CONSISTORY COURT, the place or court in which the session or assembly of ecclesiastical persons is held by the bishop or his chancellor.

CONSOLIDA'TION, in the civil law, signifies the uniting the possession or profit of land with the property, and vice versâ. In the ecclesiastical law, it is the uniting two benefices into one by assent of the ordinary, patron, and incumbent.——*Consolidation*, in surgery, the action of uniting broken bones, or the lips of a wound, by means of applications.

CON'SOLS, in commerce, funds formed by the *consolidation* (of which word it is an abbreviation) of different annuities, which had been severally formed into a capital. [See FUNDS.]

CON'SOLE, in architecture, a bracket or shoulder-piece: or an ornament cut upon the key of an arch, which has a projecture, and on occasion serves to support little cornices, figures, busts, and vases.

CON'SONANT, a letter so named because it is considered as being sounded only in connection with a vowel. But some consonants have no sound, even when united with a vowel, and others have a very imperfect sound: hence some are called *mutes*, and others *semi-vowels*.

CONSONANTE, in music, an Italian epithet for all agreeable intervals.

CONSPIRACY, a combination of men for an evil purpose; or an agreement between them to commit some crime in concert; as, a *conspiracy* against the government.——In law, it signifies an agreement between two or more, falsely to indict, or procure to be indicted, an innocent person of felony.

CON SPIRITO, in music, an Italian phrase, denoting that the part is to be played with spirit.

CON'STABLE, a civil officer, anciently of great dignity, as the Lord High Constable of England, and also the constables or keepers of castles, &c. It is now the title of an officer under the magistrates for the preservation of the peace, whose duty principally consists in seizing and securing persons guilty of tumultuary offences. There are high constables and petty constables; the former are chosen at the court leets of the hundred over which they reside, or in default of that, by the justices of the quarter-sessions, and are removable by the same authority that appoints them. The petty constables are chosen by the jury of the court-leet, or if no court is held, they are appointed by two justices of the peace.——The Lord High Constable of England had the care of the common peace, in deeds of arms, and matters of war. His power was so great and so improperly used, that it was abridged by Richard II., and was afterwards forfeited in the person of Edward Stafford, duke of Buckingham, in 1521.

CON'STAT, a certificate given out of the exchequer to a person who intends to plead or move for a discharge of anything in that court. The effect of it is to show what appears upon the record, respecting the matter in question.

CONSTELLA'TION, an assemblage or system of several stars, expressed or represented under the name and figure of some animal or other object, as a bear, a ship, and the like; whence they have derived those appellations which are convenient in describing the stars. The division of the heavens into constellations is very ancient, probably coeval with astronomy itself. Modern astronomers divide the whole starry firmament into three parts, viz. 1. The constellations in the zodiac; 2. Constellations north of the zodiac; and 3. Constellations south of the zodiac. The constellations in the zodiac are Aries; Taurus; Gemini; Cancer; Leo, Virgo; Libra; Scorpio; Sagittarius; Capricornus; Aquarius; Pisces. Many young persons have found an easy mode of remembering the names and order of the twelve signs by the aid of the following lines; and therefore, although they have neither novelty nor elegance to recommend them, their insertion here may not be altogether useless:

The *ram*, the *bull*, the heavenly *twins*,
And next the *crab* the *lion* shines,
The *virgin* and the *scales*,
The *scorpion*, *archer*, and *sea-goat*,
The man that holds the *watering-pot*,
And *fish* with glittering tails.

CONSTITUENT, in politics, one who by his vote constitutes or elects a member of parliament.——*Constituents*, in physics, the elementary or essential parts of any substance.





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or line; as, the contents of a cask or bale, the contents of a book, &c.——In geometry, the area or quantity of matter or space included in certain lines.

CON'TEXT, the parts of a discourse which precede or follow the sentence quoted; for instance, the sense of a passage of Scripture is often illustrated by the *context*.

CONTINENT, in geography, a great extent of land, not disjoined or interrupted by a sea; or a connected tract of land of great extent, as the Eastern or Western continent.——The *continental* powers, those whose territories are situated on the continent of Europe.

CONTINENTAL SYSTEM, a term given to a plan devised by Napoleon to exclude this country from all intercourse with the continent of Europe; thereby to prevent the importation of British manufactures and commerce, and thus to compel the English government to make peace upon the terms prescribed by the French ruler. The history of Napoleon's continental system begins with the decree of Berlin of Nov. 21, 1806, by which the British islands were declared to be in a state of blockade; all commerce, intercourse, and correspondence were prohibited; every Englishman found in France, or in any country occupied by French troops, was declared a prisoner of war; all property belonging to Englishmen, fair prize, and all trade in English goods entirely prohibited. Great Britain immediately directed reprisals against the Berlin decree; prohibiting all neutral vessels from sailing from one port to another belonging to France, or one of her allies, &c. This was met by counter-reprisals; and for a long time a fierce and most annoying system was carried on for the annihilation of British commerce; the effects of which are still felt, from the rival products and manufactures on the continent to which the system gave rise.

CONTORTÆ, one of Linnæus' natural orders, including plants with a single twisted petal. Thus we say, a *contorted* corolla when the edge of one petal lies over the next in an oblique direction.

CONTORTION, in medicine, a twisting or wresting of a limb or member of the body out of its natural situation; partial dislocation.

CONTOUR', in painting, sculpture, &c., the outline, or that line which defines or terminates a figure.

CONTOURNE', in heraldry, an epithet for a beast, standing or running with his face to the sinister side, being always supposed to look to the right.

CON'TRA, a Latin preposition signifying *against*, which is used as a prefix to many English words.

CONTRABAND, in commerce, is a term applied to such goods as are prohibited to be imported or exported, either by the laws of a particular state, or by special treaties. ——By the ancient law of Europe, a ship conveying any contraband article was liable to confiscation as well as the article. But in the modern practice of the courts of admiralty of this and other countries, a milder rule has been adopted, and the carriage of contraband articles is attended only with the loss of freight and expenses, unless when the ship belongs to the owner of the contraband cargo, or when the simple misconduct of conveying such a cargo has been connected with other aggravating circumstances.

CONTRA-BAS'SO, in music, Italian for thorough-bass. Also, the name of the instrument called a double bass.

CONTRACT, a covenant or agreement between two or more persons with a lawful consideration or cause which binds the parties to a performance.—— *Usurious Contract*, is an agreement to pay more interest for money than the law allows.

CONTRACTILE FORCE, that property or power inherent in certain elastic bodies, whereby, when extended, they are enabled to draw themselves up again to their former dimensions.

CONTRACTION, in a general sense, the diminishing the extent or dimensions of a body.——In surgery, the shrinking up of the muscles or arteries ——In grammar, the reducing two syllables into one, by the omission of a letter or syllable.

CONTRAINDICATION, in medicine, an indication, from some peculiar symptom or fact, that forbids the method of cure which the general tenor of the disease requires.

CONTRAPUNTIST, in music, one skilled in counterpoint.

CONTRAST, in painting, the due placing of the different parts and objects of a figure, that they may be suitably opposed to each other.

CONTRAVALLATION, *line of*, in fortification, a trench guarded with a parapet thrown round a place by the besiegers, to defend themselves against the sallies of the garrison.

CONTRAYERVA, the genus of plants *Dorstenia*; all low herbaceous plants, natives of the warm climates of America, and useful as diaphoretics.

CONTRE, in heraldry, an epithet given to several bearings, on account of their cutting the shield contrary and opposite ways: thus we meet with *contre-bend, contre-chevron, contre-pale*, &c.

CONTRIBUTION, in a general sense, the act of giving to a common stock. In a military sense, impositions upon a country in the power of an enemy, which are levied under various pretences, and for various purposes, usually for the support of the army.

CONTROLLER, in law, an overseer or officer appointed to control or verify the accounts of other officers.

CONTUMACY, in law, a refusal to appear in court when legally summoned, or disobedience to its rules and orders.

CONVALESCENCE, the insensible recovery of health and strength after disease.

CONVALLA'RIA, in botany, a genus of



A CONTINENT DIFFERS FROM AN ISLAND ONLY IN EXTENT; THUS GREAT BRITAIN, THOUGH AN ISLAND, IS A CONTINENT TO THE ISLE OF ANGLESEA.

IN TIME OF WAR, ARMS AND MUNITIONS OF WAR ARE NOT PERMITTED BY ONE BELLIGERENT TO BE CARRIED TO ANOTHER, BUT ARE SEIZED AS CONTRABAND.

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order; which theory is now universally adopted, under the name of the Solar System.

COPING, in masonry, the stone covering on the top of a wall.

COPPER, one of the six primitive metals, of a pale red colour tinged with yellow. Copper is not unfrequently found native, sometimes in small and slender fibres, and sometimes in little globular and irregular masses; but it is most frequently found in the state of ore. Next to gold, silver, and platina, it is the most ductile and malleable of the metals, and it is more elastic than any metal except steel, and the most sonorous of all the metals. Copper in sheets is much used for covering the bottoms of ships, for boilers and other utensils: mixed with tin it forms bell-metal; with a smaller proportion, bronze; and with zinc, it forms brass, pinchbeck, &c.——Great Britain has various copper-mines, in Cornwall, Devonshire, Wales, &c., but particularly in the first. Though known long before, the Cornish copper-mines were not wrought with much spirit till last century. From 1726 to 1735, they produced, at an average, about 700 tons per year of pure copper; during the ten years from 1776 to 1785, they produced at an average 2,650 tons. In 1798, the produce exceeded 5000; and it now amounts to about 12,000 tons, worth, at 100*l.* a ton, no less than 1,200,000*l.* sterling! In 1768, the famous mines in the Paris mountain, near Amlwch, in Anglesea, were discovered. The supplies of ore furnished by them were for a long time abundant beyond all precedent; but for many years past the productiveness of the mine has been declining; and it now yields comparatively little copper. At present, the entire produce of the copper mines of England, Wales, Scotland, and Ireland, may be estimated at about 15,000 tons; and Great Britain, instead of being, as formerly, dependent on foreigners for the greater part of her supplies of this valuable metal, has for many years past been one of the principal markets for the supply of others.

COPPERAS, sulphate of iron, commonly called green vitriol; a salt of a peculiar astringent taste, and of various colours, though most usually green. If sulphuric acid be diluted with water, and poured upon iron, much effervescence will be perceptible; the metal will be dissolved, and the solution, when evaporated, will exhibit the sulphate of iron, or common copperas, which is a neutral salt in a very impure state. Copperas is the basis of many dyes: it gives a fine black, though it rather subjects the material to decay, unless used with extreme caution, the least excess occasioning the cloth, &c. to rot very soon.

COPPER-PLATE, a plate of copper on which figures are engraven; also the impression taken from that plate.——*Copper-plate Printing* is performed by means of what is called a rolling-press. The engraved plate is covered with ink, made of oil and Frankfort black, then cleanly wiped on the smooth parts, and laid on wet soft paper; and on being passed between two cylinders with great force, the impression of the engraved part is perfectly transferred to the paper.

COPPICE, or COPSE, a wood of small growth, cut at certain times, and used principally for fuel.

COPPLE-DUST, powder used in purifying metals.

COPPLE-STONES, lumps and fragments of stone brought from adjacent cliffs, and rounded by the continual action of the waves.

COPTIC, the language of the Copts, or any thing pertaining to those people, who are the descendants of the ancient Egyptians, and called *Copthi* or *Copts*, as distinct from the Arabians and other inhabitants of modern Egypt.

COPULA, the word that connects any two terms in an affirmative or negative proposition; as "God *made* man;" "Religion *is* indispensable to happiness."

COPULATIVE PROPOSITIONS, in logic, those where the subject and predicate are so linked together, by copulative conjunctions, that they may be all severally affirmed or denied one of another. "Science *and* literature enlighten the mind, *and* greatly increase our intellectual enjoyments."

COPY, in law, signifies the transcript of any original writing, as the copy of a patent, charter, deed, &c. A common deed cannot be proved by a copy or counterpart, where the original may be procured. But if the deed be enrolled, certifying an attested copy is proof of the enrolment, such copy may be given in evidence.——*Copy* is also used for the imitation of an original work, more particularly in paintings, and other works of art.——*Copy*, among printers, denotes the manuscript or original of a book, given to be printed. Also, when we speak of a book, or a set of books, we say a *copy*; as, a copy of the Scriptures; a copy of Sir Walter Scott's works, &c.

COPYHOLD, a tenure of landed property, by which the tenant holds his land by copy of court roll of the manor at the will of the lord, or rather, according to the custom of the manor by which such estate is discernible.

COPYRIGHT, the exclusive right of printing and publishing copies of any literary performance, either by an author in his own right, or vested in the hands of those to whom he may have assigned that right.

COQUETTE, a light, trifling girl, who endeavours to attract admiration by making a display of her amatory arts, from a desire to gratify vanity, rather than to secure a lover. The species is very numerous, and by no means confined to the fair sex. In France, the males are easily designated by the masculine termination, as *coquet*; but in England, we have to use *male* as a prefix to the word, when we speak of one of these silly flutterers.

COR, in anatomy, the heart.——*Cor Caroli*, in astronomy, a constellation in the



THE DANGER OF USING COPPER UTENSILS IN COOKING, CONSISTS IN THE LIQUOR BEING ALLOWED TO GET COLD IN THEM, NOT IN HEATING IT.

COPPER ORE IS ABUNDANT IN SWEDEN, SAXONY, RUSSIA, PERSIA, JAPAN, AND CHINA, AS ALSO IN CHILI AND OTHER PARTS OF SOUTH AMERICA.

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It is occasionally employed as a sudorific, and as a corrective of certain purgatives.

CORIA'RIA, in botany, a genus of plants, class 22 *Dioecia*, order 10 *Decandria*. The species are shrubs, as *Coriaria myrtifolia*, myrtle-leaved sumach, &c.

CORINTHIAN, pertaining to Corinth, a celebrated city of Greece. The *Corinthian Order*, in architecture, is the noblest and richest of the five orders. Its capital is adorned with two rows of leaves, between which arise little stalks or caulicoles, forming sixteen volutes.

CO'RIUM, in anatomy, any thing which serves as an integument or covering; as the skin or hide of an animal, the shell of an egg, &c.

CORK, the bark of the cork-tree, a species of *quercus*, or *oak*, growing, in great abundance, in Spain, Italy, and France. The bark is taken from the tree by making an incision down the whole height of the trunk, and, at each extremity, another round the girth. The tree is supplied with this coat in a degree so peculiarly abundant, that it not only continues to flourish uninjured by the act of barking, but, in its natural state, regularly sheds the whole, and acquires a new covering. Cork is light, porous, nearly impervious to most liquors, and wonderfully elastic; qualities which render it superior to all other substances for stoppers for bottles, in the manufacture of which it is principally made use of. It is also employed as buoys to float nets, in the construction of life-boats, the making of water-proof shoes, and in various other ways. There are two sorts of cork, the white and the black; the former grows in France, and the latter in Spain. The cakes of the white are usually more beautiful, more smooth, lighter, and of a finer grain than the black; and when this kind is burned in close vessels it forms the pigment called *Spanish black*. The uses of cork were well known to the ancients, and were nearly the same to which it is applied by us.

COR'MORANT, or COR'VORANT, an exceedingly voracious bird of the pelican tribe. It builds on the highest cliffs hanging over the sea, and feeds on fish.

CORN, farinaceous seed, as that of wheat, rye, barley, oats, and maize. In short, it comprehends all the kinds of grain which constitute the food of men and horses. We also use the word for grain growing in the fields, the plants or stalks, being included in the word corn, until separated from the ears.——COAN, in surgery, an excrescence or hard tubercle like a flat wart, growing in the feet, especially upon the joints of the toes. Corns are justly attributed to the pressure of tight or narrow-toed shoes, especially if a person is obliged to stand or walk much.

CORN'EA, in anatomy, the transparent membrane in the fore-part of the eye, through which the rays of light pass.

COR'NEL-TREE, or CORNE'LIAN-TREE, the dog-wood, or cornelian cherry-tree, a genus of plants of several species. The *mascula*, or cornelian cherry-tree, has a stem twenty feet high, and produces a small, red, acid fruit.

COR'NET, an instrument very similar to a trumpet, which is used in the army.——Also a commissioned officer in a troop of cavalry. He bears the colours, and commands in the absence of the lieutenant. His rank or commission is called a *cornetcy*.

CORN'FLAG, in botany, the *Gladiolus*, a genus of plants, having a double tuberose root, with leaves like the fleur-de-lis, and a flower consisting of one petal, shaped like the lily.

COR'NICE, in architecture, the uppermost member of the entablature of a column; or any moulded projection that crowns or finishes the part to which it is affixed, as the cornice of a room, a door, &c.

CORNIC'ULATE, in botany, bearing a little spur or horn.

CORNUCO'PIA, or the HORN OF PLENTY, a source whence, according to the ancient poets, every production of the earth was lavished; a gift from Jupiter to his nurse, the goat Amalthea. In elucidation of this fable, it has been said that in Lybia, the ancient name of a part of Africa, there was a little territory, in shape not ill resembling a bullock's horn, which Ammon, the king, gave to his daughter Amalthea, the nurse of Jupiter. Upon medals the cornucopia is given to all deities, genii, and heroes, to mark the felicity and abundance of all the wealth procured by the goodness of the former, or the care and valour of the latter.

CORNUCO'PIÆ, in botany, a genus of plants, class 3 *Triandria*, order 2 *Digynia*. It is so called from the resemblance of the flowers in the involucre to a horn of plenty.

COR'NUS, in botany, a genus of plants, class 4 *Tetandria*, order 2 *Digynia*. The species are trees or shrubs, as *cornus mascula*, the cornelian cherry, *cornus florida*, and many others.

CORNU AMMONIS, a shell, in shape resembling a ram's horn.

COROL'LA or COR'OL, in botany, the leafy parts of a flower, which is marked with divers colours, and which surrounds the parts of fructification. Each leaf or division of the corolla is called a petal; and according as there is one, two, or three of these petals, the corolla is said to be monopetalous, dipetalous, tripetalous, &c.

COR'OLLARY, a conclusion or consequences drawn from premises, or from what is advanced or demonstrated.

COR'OLLULE, or COR'OLLET, a term used by botanists for one of the little partial flowers, which together make up the compound ones; the floret is an aggregate flower.

CORO'NA, in architecture, a large flat member of a cornice, crowning the entablature and the whole order.——In anatomy, the upper surface of the molar teeth or grinders.——In optics, a halo or luminous circle round the sun or moon.——In botany, the circumference or margin of a radiated compound flower.

CORONA'LIS SUTU'RA, in anatomy,



BY CLOSING WINE BOTTLES WITH BLADDER INSTEAD OF CORKS, THE WATERY PARTS ONLY ESCAPE, AND THE STRENGTH OF THE WINE IS IMPROVED.

THE PRACTICE OF EMPLOYING CORK TO ASSIST IN SWIMMING IS VERY ANCIENT, AND ITS USE HAS PROVED OF GREAT VALUE IN CASES OF SHIPWRECK.

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female form. To display the general contour of the figure, without impeding the gracefulness of its motions; and to guard it from slight inelegancies, resulting from improper position, or the character of exterior drapery, are the legitimate objects of the corset. But it often happens that females, naturally endowed with fine forms, wear corsets which are only fit for those who are disproportionately shaped, and destroy the graceful ease of their movements, by encasing themselves in barriers of steel and whalebone. Ladies of a certain age, who, from luxurious living or indolent habits, have grown corpulent, may be permitted to adopt any mode of dress they please; their experience ought to be sufficient to direct them; but for young persons, in whom the organs of the body are in a state of development, the corset should be of the simplest character, so that the lungs should have their full play, and no undue compression of the muscles be allowed to take place, whatever the capricious dictates of fashion may urge to the contrary.

**CORTE'GE**, a French word, signifying the train or retinue that accompanies a person of distinction.

**CORTES**, the assembly of the states of Spain and Portugal; answering, in some measure, to the parliament of Great Britain.

**CORTEX**, the outer bark of a plant.

**CORTICAL**, consisting of bark or rind; belonging to the external covering, as the *cortical* part of the brain.

**CORUN'DUM**, a mineral of the sapphire kind, which is found in the East Indies.

**CORUSCATION**, a sudden flash of light in the atmosphere; or the light produced by the combustion of inflammable gas in the earth.—*Artificial coruscations* may be produced by phosphorus and sulphuric acid, or by sulphuric acid and iron filings.

**CORVETTE**, a French word for any vessel of war carrying less than twenty guns.

**CORVI'NUS LAPIS**, in mineralogy, a stone, found in India, remarkable for its making a noise like thunder when heated.

**COR'VUS**, the Raven or Crow kind, in ornithology, a genus of birds, of the order of *pica*.—In astronomy a constellation of the southern hemisphere.—*Corvus*, in antiquity, a military engine invented by the Romans at the time of their wars in Sicily, when they first engaged the Carthaginian fleet. It consisted of a strong platform of boards at the prow, moveable as on a spindle, and thrown over the side of an enemy's vessel when grappled.

**CORYBAN'TES**, in antiquity, priests of the goddess Cybele, celebrated for their wild and extravagant attitudes in dancing, &c.

**CORYDA'LES**, the twenty-fourth Linnæan natural order of plants, with helmet-shaped flowers.

**CORYMB**, in botany, a species of inflorescence, in which the lesser flower stalks are produced along the common stalk on both sides, rising to the same height, so as to form an even surface.

**CORYM'BIATED**, in botany, garnished with corymbs.

**CORYMBIF'EROUS**, bearing fruit or berries in clusters, or producing flowers in clusters.

**CORYPHÆ'US**, a leader of a chorus.

**CORYPHENE**, in ichthyology, a fish with a sloping truncated head, and dorsal fin extending the whole length of the back.

**COSCIN'OMANCY**, the ancient art of divination by means of a sieve. The sieve was suspended, and if it trembled or turned when the name of a suspected person was mentioned, the party was deemed guilty.

**CO-SE'CANT**, in geometry, the secant to an arc which is the complement of another to ninety degrees.

**CO'-SINE**, in geometry, the sine of an arc which is the complement of another to ninety degrees.

**COSMET'IC**, any preparation that renders the skin soft and white, or helps to beautify and improve the complexion.

**COS'MICAL**, relating to the whole system of visible bodies, including the earth and stars.

**COSMOG'ONY**, in physics, the science or theory of the formation of the world.

**COSMOG'RAPHY**, a description of the world or universe; or the science of describing the several parts of the visible world.

**COS'MOLABE**, an ancient instrument, very similar to the astrolabe, for measuring distances in the heavens or on earth.

**COSMOL'OGY**, a treatise relating to the structure and parts of creation, the elements of bodies, the laws of motion, and the order and course of nature.

**COSMOP'OLITE**, a citizen of the world; one who makes himself at home everywhere.

**COS'SACKS**, the tribes who inhabit the southern and eastern parts of Russia, Poland, the Ukraine, &c., paying no taxes, but performing, instead, the duty of soldiers. They form a kind of military democracy; and have proved highly serviceable, as irregular cavalry, in the Russian campaigns. Their principal weapon is a lance from ten to twelve feet in length; they have also a sabre, a gun, and a pair of pistols, as well as a bow and arrows. The lances, in riding, are carried upright by means of a strap fastened to the foot, the arm, or pommel of the saddle. Those who use them carry a quiver over the shoulder. Though little adapted for regular movements, they are very serviceable in attacking baggage, magazines, and in the pursuit of troops scattered in flight. They fight principally in small bodies, with which they attack the enemy on all sides, but mostly on the flanks and in the rear, rushing upon them at full speed, with a dreadful hurrah, and with leveled lances.

**COS'TUME**, in painting and the fine arts generally, the observance of that rule or precept by which an artist is enjoined to make any person or thing sustain its proper character; the scene, dress, arms, manners, &c. all corresponding.

**CO-TAN'GENT**, in geometry, the tan-



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bow of a gentleman.——*Tenure by courtesy*, in law, is where a man marries a woman seized of an estate of inheritance, and has by her issue born alive, which was capable of inheriting her estate: in this case, on the death of his wife, he holds the lands for his life, as tenant by courtesy.

COUSIN, the son or daughter of an uncle or aunt; the children of brothers and sisters being usually denominated *cousins*, or *cousin-germans*. In the second generation they are called *second cousins*.

COVENANT, in law, a writing containing the terms of agreement or contract between parties; or the clause of agreement in a deed containing the covenant. ——In theology, the promise of God to man, that man's perfect obedience should entitle him to happiness. The covenant of grace, is that by which God engages to bestow salvation on man, upon the condition that man shall believe in Christ, and yield obedience to the terms of the Gospel.

COW-POX, the vaccine disease; a pustule transferred from the udder of a cow to the human body, where it exhausts or neutralises some morbid action of the *rete mucosum*, which prevents a disease of the same membrane, called *variola*, or small-pox.——The following paragraph having appeared in the public papers at the moment we were going to press with this sheet, we are glad to give it insertion. Much has been before written on the subject; but nothing that we have seen appears so conclusive and satisfactory: "Mr. Ceely, surgeon, of Aylesbury, has demonstrated the important fact, that small-pox and cow-pox have the same origin, the latter being small pox communicated to the cow. Mr. C. inoculated cows with small-pox matter; the vesicle produced in the animal had every appearance of the vaccine pock. To ascertain the point, children were inoculated with matter taken from the cow thus artificially infected; the result was, a fine, genuine vaccine vesicle. To establish the fact satisfactorily, these children were submitted to small-pox inoculation, and found to be protected from the disease. Twenty-five successive inoculations have now been performed with this new virus, which may truly be named *variola vaccina*, and it continues to produce the most satisfactory vesicles; the matter has been employed in Bristol with perfect success."

COWRY, shell-money. The *cypræa moneta* is used for this purpose; and of which 100 in the East Indies pass for a penny.

CRAB, or CANCER, a genus of crustaceous fish, of which there are numerous species, having in general eight legs, besides two large claws. The habits of crabs are various; some are exclusively aquatic, and remain on the sands or rocks, at great depths in the sea; others inhabit excavations formed in the soft coral reefs or bars on certain coasts; some spend their days altogether on shore, living in burrows or dens; others live on rocky beaches, basking in the sun, and only retiring into the sea when alarmed; while some species are completely terrestrial, inhabiting holes upon the highest hills and mountains of the West Indies. The most remarkable are the violet crabs of the Bahamas, which live in the mountains, but once a year proceed to the sea in a body of many millions, a journey which employs them some weeks. Here they cast their spawn, and soon after millions of young crabs travel into the mountains. The crabs which abound on our coasts, are the *locusta* and *mænas* species.

CRAB'S CLAWS, in the materia medica, are the tips of the claws of the common crab broken off at the verge of the black part. They are used as an alkaline absorbent, and form the base of many of the compound sudorific powders.

CRAB'S EYES, concretions in the head of the cray-fish. They are accounted not only absorbent and drying, but also discussive and diuretic.

CRAMP, a convulsive contraction of a muscular part of the body, with pain.

CRAN'BERRY, in botany, a species of *vaccinium*, growing only on peat bogs or swampy land, and bearing small bright red berries, which have a pleasant acid flavour, and are much used in tarts.

CRANE, a migratory fowl of the genus *Ardea*. The common crane, or *ardea grus*, has black wing-feathers, with an ash-coloured body, and flies in great flocks in many countries. There are a great many species, but the characteristics of all consist in a straight long bill, with a furrow from the nostrils towards the point, long legs, and a long neck. The Siberian crane is noted for its sagacity, and the flocks keep a sentinel to warn them of danger. ——*Crane*, a machine for raising great weights, consisting of a horisontal arm, or piece of timber, projecting from a post, and furnished with a pulley. They are also made of cast iron, on the principle of the wheel and pinion; by which they are rendered very commodious, and capable of raising immense weights.

CRA'NE-LINES, in a ship, are lines going from the upper end of the sprit-sail top-mast, to the middle of the fore-stays. They serve to keep the sprit-sail-top-mast upright and steady in its place, and to strengthen it.

CRA'NE'S-BILL, in botany, the plant *Geranium*, of many species; so named from an appendage of the seed-vessel, which resembles the beak of a crane.

CRA'NE-FLY, an insect of the genus *Tipula*, of many species.

CRANIOLOGY, the science which investigates the structure and uses of the skulls in various animals, particularly in relation to their specific character and intellectual powers. One who is versed in this science is termed a *Craniologist*.

CRANIOMETER, an instrument for measuring the skulls of animals. The art of measuring them for the purpose of discovering their specific differences, is called *Craniometry*.





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NO SHIP IS ADMITTED TO BE A BRITISH SHIP, UNLESS DULY REGISTERED AND NAVIGATED AS SUCH BY A "CREW," THREE FOURTHS OF WHICH ARE BRITISH.

CREMO'NA, in music, an appellation for the superior sort of violins, which were originally made at Cremona.

CRENOPH'YLAX, in antiquity, a magistrate at Athens, who had the inspection of fountains.

CREPUN'DIA in antiquity, a term used to express such things as were worn as ornaments by children, as rings, jewels, &c., which might serve as tokens whereby they afterwards might be recognized, or as an inducement for others to take charge of them.

CREPITA'TION, the crackling noise made by some salts during the process of calcination.

CREPUS'CULUM or CREPUSCLE, the twilight, which begins and ends when the sun is 18 degrees below the horizon. It is occasioned by the refraction of the sun's rays.

CRESCEN'DO, in music, an Italian term for the gradual swelling of the notes over which it is placed.

CRES'CENT, the increasing or new moon, which, when receding from the sun, shows a curving rim of light, terminating in points or horns.——The Turkish standard, on which a crescent is depicted; and, figuratively, the Turkish power or empire of the crescent. ——In heraldry, it is an honourable ordinary, or a mark of distinction for the second sons of families, or those descended from them.

CRESCENTIA, in botany, a genus of plants, class 14 *Didynamia*, order 2 *Angiospermia*. The species are the *Crescentia cujete*, or narrow-leaved calabash-tree, and the *Crescentia cucurbitina*, or broad-leaved calabash-tree.

CRESS, the name of several species of plants; of which the most useful are water-cresses, which are eaten as a salad, and are valued in medicine for their antiscorbutic qualities. They grow on the banks of rivulets and other moist places.

CREST, the plume of feathers or other material on the top of the ancient helmet. The crest is considered a greater criterion of nobility than the armour generally, and therefore forms an important subject in the science of heraldry.

CRE'TA, a genus of earths, of the calcareous order, which, by a chemical analysis, is found to consist of carbonate of lime, carbonic acid, &c. It is soluble in acids, and calcines in the fire.

CRETA'CEOUS, partaking of the qualities of, or abounding in chalk.

CREUX, a French term used in sculpture, where the lines and figures are cut below the surface of the substances engraved, and thus stands opposed to *reliero*, which latter term intimates the prominence of the lines and figures which appear above the surface.

CREW, the company of seamen belonging to a ship or boat.

CRIB'RIFORM, in anatomy, a term applied to the laminæ of the ethmoid bone, through which the fibres of the olfactory nerve pass to the nose.

CRIBRO'SUM OS, in anatomy, called also *os ethmoides*, a bone situated internally in the fore part of the basis of the skull. The uses of it are to be a principal part of the organ of smelling, and to give a very great extent to the pituitary membrane in a small compass.

CRICK'ET, an active, manly game, played with bats and a ball, and which is almost peculiar to this country. The number of the party on each side is eleven, who alternately take the innings, and alternately the bowling and watching.——*Cricket*, the *Gryllus*, in zoology, a harmless insect of the grasshopper species, common near ovens, and fire-places. Their noise, called *chirping*, is produced merely by the friction of the bases of their *elytra*, or wing-cases, against each other.

CRICOI'DES, in anatomy, a cartilage of the larynx, called also the annular cartilage.

CRIM'INAL, in the sense usually applied, signifies, a person indicted or charged with a public offence, and one who is found guilty.

CRIME, the transgression of a law, either natural or divine, civil or ecclesiastic. In the general sense of the word, crimes are understood to be offences against society or morals, as far as they are amenable to the laws. To this we may add, in order more clearly to distinguish between words often esteemed synonymous, that actions contrary to the precepts of religion are called *sins*; actions contrary to the principles of morals are called *vices*; and actions, contrary to the laws of the state, are called *crimes*.

CRITCH'TONITE, a mineral, occurring in primitive rocks with octahedrite. It is of a velvet black colour, and crystalizes in very acute small rhomboids.

CRIN'GLE, in marine language, a hole in the bolt-rope of a sail, to receive the ends of the ropes by which the sail is drawn up to its yard, or to extend the leech by the bow-line-bridles.——*Iron cringles, or hanks*, are open rings running on the stays, to which the heads of the stay-sails are made fast.

CRI'SIS, in medicine, according to Galen, is a sudden change, either for the better or the worse, indicative of recovery or death. In its more general sense, it denotes that stage of a disorder from which some judgment may be formed of its termination. At the approach of a crisis, the disease appears to take a more violent character. If the change is for the better, the violent symptoms cease with a copious perspiration, or some other discharge from the system. After a salutary crisis, the patient feels himself relieved, and the dangerous symptoms cease. —— By a *crisis* is also meant the point of time when an affair is arrived at its height, and must soon terminate or suffer a material change.

CRISP, in botany, an epithet for a leaf folded over and over, at the edges, which are always serrated, dentated, or lacerated. *Crispature* is the state of its being curled.

IN THE ANCIENT TOURNAMENTS, THE CAVALIERS HAD PLUMES OF FEATHERS, ESPECIALLY THOSE OF OSTRICHES AND HERONS, FOR THEIR CRESTS.



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serpents, furnished with poisonous fangs. The serpents of this family seldom bite except when irritated, or for the purpose of securing their prey. The rattle consists of hollow, hard, dry, and semi-transparent bones, resembling, in some measure, the shape of the human *os sacrum*: the tip of every uppermost bone runs within two of the bones below it; by which contrivance they have not only a moveable coherence, but also are enabled to make a more multiplied sound, each bone hitting against the other two at the same time. The number of joints in the rattle of each reptile is various, from five to forty. The poisonous secretion is discharged from the fangs of the dog teeth, or tusks placed without the upper jaws, after the manner of the viper; and after the first time the animal seems progressively to lose its power of poisoning, till it has had time to recruit itself by a respite of some hours.

CROUT, KROUT, or SOUR-CROUT, is cabbage chopped fine, and pickled. It is made by placing chopped cabbage in layers in a barrel, with salt and carraway seeds sprinkled between the layers, then pressing it down, and suffering it to remain till it has undergone fermentation. It is considered an efficacious preservative against the scurvy, and is used at sea, particularly in the Russian navy.

CROW, in ornithology, a species of *Corvus*, about the size of the largest tame pigeon, and of a fine deep black colour. The crow is a voracious fowl, feeding on carrion, grain, &c.——*Scare-crow*, the black *Larus*, with grey wings and red legs.

CROW-BAR, in mechanics, an iron lever with a claw at one end, and a sharp point at the other: used for raising and moving weights.

CROW'-FOOT, a complication of small cords, spreading out from a long block: used on board of ships, for suspending the awnings, or keeping the top-sails from striking against the tops.

CROW'S'-BILL, in surgery, a kind of forceps, for extracting bullets and other things from wounds.

CROW'S'-FEET, in the art of war, an iron instrument with four points, thrown upon breaches, or in passes where the enemy's cavalry are expected. [See *Caltrop*.]

CROWN, an ornamental badge of regal power, worn on the head by sovereign princes.——The top of the head; also the top of any elevated object.——In architecture, the uppermost member of a cornice.——Among jewellers, the upper work of the rose diamond.——An English silver coin, of the value of five shillings.——In botany, an appendage to the top of a seed, which serves to bear it in the wind.——Among the various crowns and wreaths in use among the Greeks and Romans were the following: *Corona aurea* (the golden crown); the reward of remarkable bravery. *Corona castrensis*; given to him who first entered the camp of an enemy. *Corona civica*; one of the highest military rewards: it was given to him who saved the life of a citizen. *Corona convivialis*; the wreath worn at feasts. *Corona muralis*; given by the general to the soldier who first scaled the enemy's wall. *Corona navalis*; given to him who first boarded and took an enemy's vessel: it was next in rank to the civic crown. *Corona nuptialis*; a crown or wreath worn by brides. *Corona obsidionalis*; a reward given to him who delivered a besieged town, or a blockaded army. It was one of the highest military honours, and very seldom obtained. *Corona triumphalis*; a wreath of laurel which was given by the army to the *imperator*, who wore it on his head at the celebration of his triumph.

CROWN-GLASS, the finest sort of window-glass.

CROWN-IMPE'RIAL, a plant of the genus *Fritillaria*, having a beautiful flower.

CROWN-IMPERIAL-SHELL, a beautiful species of *Voluta*, the head of which is surrounded with a series of sharp-pointed tubercles, so as to resemble an open crown: it has also two broad and very beautiful zones running round it.

CROWN'-OFFICE, an office belonging to the court of Queen's Bench, in which the attorney-general exhibits informations for crimes and misdemeanors.

CROWN'-POST, in building, a post which stands upright in the middle, between two principal rafters.

CROWN'-WHEEL, the upper wheel next the balance in a watch, and which drives the balance.

CROWN'-WORK, in fortification, an outwork running into the field, consisting of two demi-bastions at the extremes, and an entire bastion in the middle, with curtains. It is designed to gain some advantageous post, and cover the other works.

CROYL'STONE, in mineralogy, crystalized cauk.

CRU'CIAL, in surgery, an epithet for transverse, or in the form of a cross; as, a *crucial* incision.

CRU'CIBLE, a vessel or melting-pot, made of clay, and so tempered and baked as to endure the greatest fire. It is used in chemical operations, and by workers in gold and silver. Silver, platina, and iron are also used occasionally as crucibles.

CRUCIFIX'ION, the act or punishment of putting to death by nailing or fastening a person to a *crucifix*, or cross.

CRU'CIFORM, in botany, an epithet for flowers consisting of four petals disposed in the form of a cross.

CRU'DITY, among physicians, is applied to undigested substances in the stomach; to humours in the body which are unconcocted, and not prepared for expulsion; and to the excrements.

CRU'ISER, a small armed vessel that sails to and fro in quest of the enemy, to protect the commerce of its own nation, or for plunder.

CRUPELLA'RII, in antiquity, nobility among the Gauls, who were armed with a complete harness of steel.

CRU'OR, sometimes signifies the blood in general; sometimes only the venous



VINEGAR IS BOILED FOR PICKLING, IN ORDER THAT THE IMPURITIES, COAGULATED BY HEAT, MAY BE SEPARATED BY SKIMMING, WHEN COOL.

THE BEST CRUCIBLES ARE FORMED FROM A PURE FIRE CLAY, MIXED WITH FINELY GROUND CEMENT OF OLD CRUCIBLES, AND A PORTION OF PLUMBAGO.

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any cube is found by multiplying the superficial area of one of the sides by the height.—*Cubic Number*, in arithmetic, that which is produced by the multiplication of a square number by its root; thus, 64 is a cube number, and arises by multiplying 16, the square of 4, by the root 4.—*Cube Root*, the side of a cube number; thus 3 is the cube root or side of 27.

CU'BEB, in botany, the fruit of the *Piper Scubebæ*. It is less than pepper, good for strengthening the stomach, and aromatic.

CU'BIC, or CU'BICAL, having the form of a cube, or that may be contained within a cube. Thus, a *cubic* foot of water is the water that may be contained within six equal sides, each a foot square.

CU'BIT, an ancient measure, equal to the length of a man's arm, from the elbow to the tip of the middle finger. Among different nations the length of the cubit differed. The English was 18 inches, the Roman rather less, and the cubit of the Scriptures is supposed to have been 22 inches.

CU'BITANS, in anatomy, an epithet for two muscles of the wrist, one of which, called the *externus*, serves to extend the wrist; and the other, the *internus*, to bend it.

CU'BITUS, in anatomy, a bone of the arm, reaching from the elbow to the wrist. The cubitus, for the sake of the more easy and varied motion, is composed of a binary number of Bones, called the *cubitus*, or *ulna*, and the *radius*. The situation of the ulna is interior, its length is greater than that of the radius, and has a motion of flexion and extension. The epithet *cubital* is accordingly used; as, the *cubital* nerve, artery, or muscle.

CUCK'OO-SPITTLE, a white froth or spume very common on many plants in the spring, which forms the nidus of a sort of cicada.

CUCU'BALUS, a genus of plants, class 10 *Decandria*, order 3 *Trigynia*. The species are mostly perennials, and consist of the various campions.

CU'CULUS, or CUCKOO, a genus of birds belonging to the order *Picæ*. They lay their eggs in the nests of other birds, chiefly in that of the hedge-sparrow, from which the young cuckoos turn out the young sparrows. The cuckoo arrives in Britain about the middle of April, and departs in the first week of July. To this shortness of the period of residence, joined with the numerous progeny which nature has destined it to yield, ornithologists attribute the motive for this singular arrangement in the economy of nature; for by means of this resource, cuckoo's eggs are laid in an abundance that could not be effected if the bird was to sit herself.

CU'CUMBER, the name of a plant and its fruit, of the genus *Cucumis*. The flower is yellow and bell-shaped; and the stalks trail on the ground, or climb by their creepers. The fruit is cold, watery, and by many thought unwholesome.

CU'CUMIS, a genus of plants, class 21 *Monoecia*, order 10 *Syngenesia*. This genus comprehends all animals with herbaceous scandent stems, as the gourd, cucumber, and melon.

CU'CURBIT, a chemical vessel in the shape of a gourd. It is used in distillation: and with its head and cover, constitutes the alembic.

CUCURBITA'CEÆ, one of Linnæus's natural orders of plants, comprehending those which resemble the gourd, as the cucumber, melon, pumpkin, &c.—The epithet *cucurbitaceous* is accordingly given to any fruit resembling a gourd.

CUD, the food which ruminating animals chew over again; from whence, *to chew the cud*, signifies, to ponder, think, or ruminate upon a thing.

CUD'DY, in large ships, a place lying between the captain-lieutenant's cabin, and the quarter-deck, under the poop. It is divided into partitions for the master and other officers. Also, a sort of cabin or cook-room, in the fore-part or near the stern of a lighter, or barge of burden.

CUE, the last words of a speech, which a player, who is to answer, catches and regards as an intimation to begin. Also, a hint given to him of what and when he is to speak.

CUIRASS', a piece of defensive armour, made of iron plate, well hardened, and covering the body from the neck to the girdle.—*Cuirassiers*, heavy cavalry armed with a cuirass. In former times cuirasses were very common, but appear to have been disused in England about the reign of Charles II. The lance having, of late years, again been introduced, the cuirass has been revived among the European cavalry.

CUL DE LAMP, in architecture, a term used for several decorations, in vaults and ceilings.

CUL'DEES, in church-history, an order of priests, formerly inhabiting Scotland and Ireland. Being remarkable for the religious exercises of preaching and praying, they were called, by way of eminence, *cultores Dei*. After having exercised a great influence throughout the country, they are said to have been overthrown by the increase of the papal power, and the institution of monasteries, more congenial to the aspiring views of the see of Rome.

CU'LEUS, in Roman antiquity, the largest measure of capacity for liquids, containing forty *urnæ*, equal to 180 gallons.

CU'LEX, in entomology, a genus of two-winged flies, the mouth of which are tubular, but exceedingly slender and filiform. Under this genus are comprehended the gnats and humble bees.

CULI'NA, in antiquity, that part of the funeral pile in which the banquet was consumed.—*Culinæ*, a burial-ground for the poor.

CUL'LIAGE, a barbarous and immoral practice, whereby the lords of manors anciently assumed a right to the first night of their vassals' brides.

CULM, in botany, the stalk or stem of corn or grasses, usually jointed and hollow.



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——CURIA, in law, signifies generally a court, but it was taken particularly for the assemblies of bishops, peers, &c. of the realm, called *solemnis curia, curia publica*, &c.

CUR'LEW, an aquatic fowl, of the genus *Scolopax*, and the grallic order. It is of an ash colour, diversified with black; frequents the sea-shore in winter, and in summer retires to the mountains. There is also another bird so called, which is larger than a partridge, and frequents the cornfields in Spain.

CUR'RANT, the fruit of a well-known shrub belonging to the genus *Ribes*. There are many varieties, red, white, and black. A small kind of dried grape, imported from the Levant, is also called by the same name.

CUR'RENCY, in commerce, bank-notes or other paper-money issued by authority, and which are continually passing current for coin.

CUR'RENTS, in navigation, certain settings of the stream, by which ships are compelled to alter their course, and submit to the motion impressed upon them by the current. The causes of currents are very numerous. The waters may be put in motion by an internal impulse; by a difference of heat and saltness; by the inequality of evaporation in different latitudes; and by the change in the pressure at different points of the surface of the ocean. The existence of cold strata, which have been met with at great depths in low latitudes, prove the existence of a low current, which runs from the pole to the equator. It proves likewise, that saline substances are distributed in the ocean, in a manner not to destroy the effect produced by different temperatures. ——It is well known also that there are different *currents of air*.

CUR'RYING, the art of dressing skins after they are tanned, for the purposes of the shoemaker, coach and harness-maker, &c., by giving them the necessary smoothness, lustre, colour, and suppleness. The person working at, or carrying on this business, is called a *currier*.

CUR'SITOR, a clerk belonging to the court of chancery, whose business it is to make out original writs.

CURTAIN, in a general sense, a cloth hanging round a bed, or at a window, which may be contracted, spread, or drawn aside at pleasure. Also, a cloth-hanging used in theatres, to conceal the stage from the spectators.——In fortification, the *curtain* is that part of the rampart which is between the flanks of two bastions, bordered with a parapet, behind which the soldiers stand to fire on the covered way and into the moat.

CURTA'TION, in astronomy, the interval between a planet's distance from the sun and the curtate distance. The *curtate distance* is the distance of a planet from the sun to that point, where a perpendicular let fall from the planet meets with the ecliptic.

CU'RULE CHAIR, in Roman antiquity, a chair, or stool, adorned with ivory, wherein the chief magistrates of Rome had a right to sit. The curule magistrates were the ædiles, the prætors, censors, and consuls. This chair was placed in a kind of chariot, whence it had its name.

CURVATURE *of a line*, is the peculiar manner of its bending or flexure, by which it becomes a curve of such and such peculiar properties.

CURVET, in horsemanship, a particular leap of a horse, when he raises both his fore legs at once, equally advanced, and as his fore legs are falling, he raises his hind legs, so that all his legs are from the ground at once.

CUSP, in geometry, the point or corner formed by two parts of a curve meeting, and there terminating.——In astronomy, a term for the horns of the moon.

CUSPIDATE, or CUSPIDATED, a term in botany, for a leaf, &c. having a sharp end, like the point of a spear, or terminating in a bristly point.

CUSTARD-APPLE, in botany, a species of *Annona*, growing in the West Indies, whose fruit is of the size of a tennis ball, of an orange colour, containing a yellowish pulp of the consistence of custard.

CUSTOM, in law, long established practice or usage, which constitutes the unwritten law, and long consent to which gives it authority.

CUSTOMS, in political economy, the duties, toll, tribute, or tariff, payable to the king upon merchandize exported and imported, and which form a branch of the perpetual taxes.

CUSTOS ROTULO'RUM, the keeper of the rolls and records of the sessions of the peace, and also of the commission of the peace itself. He is usually a nobleman, and always a justice of the peace, of the quorum in the county where he is appointed.——*Custos Brevium*, the principal clerk belonging to the Common-pleas.——*Custos oculi*, in surgery, an instrument for preserving the eye in some operations.

CUTA'NEOUS, an epithet for whatever belongs to or affects the skin; as, a *cutaneous* eruption, &c.

CUTICLE, in anatomy, the scarf-skin, a thin membrane closely lying upon the skin or *cutis*, of which it seems a part, and to which it adheres very firmly.

CUTIS, in anatomy, the *derma*, or inner skin, which lies under the cuticle: it is full of pores, nerves, fibres, lymphatic ducts, &c. and is called the *cutis vera*, or true skin, in distinction from the cuticle.

CUTLAS, a broad curving sword, used by seamen in boarding, &c.

CUTLERY, a term applied to all cutting instruments made of steel. Although in a general sense it comprises all those articles denominated edge-tools, it is more particularly confined to the manufacture of knives, scissars, razors, surgical instruments, and swords. Those articles which require the edge to possess great tenacity, at the same time that superior hardness is not required, are made from sheer-steel. The finer kinds of cutlery are made from steel which has been in a state of fusion, and which is



CUSTOMS (FORMERLY CALLED DUTIES OF TONNAGE AND POUNDAGE) APPEAR TO HAVE EXISTED IN ENGLAND EVEN BEFORE THE NORMAN CONQUEST.

THE MOST MINUTE INSTRUMENTS ARE GENERALLY MADE OF STEEL, ON ACCOUNT OF ITS HARDNESS AND EXTRAORDINARY DUCTILITY.

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THE SIMPLICITY OF LIFE ADOPTED BY THE CYNICS, DEGENERATED INTO CARELESSNESS, AND BROUGHT THEM DOWN TO THE LEVEL OF MERE SAVAGES.

THE CYPRESS LOVES THE MOST GLOOMY SWAMPS; AND ITS BRANCHES ARE GENERALLY SEEN COVERED WITH SAD FESTOONS OF LONG MOSS.

**CYMA'TIUM, CY'MA**, or **SI'MA**, in architecture, a member or moulding of the cornice, the profile of which is waving, that is, concave at the top and convex at the bottom. When the concave part of the moulding projects beyond the convex part, the *cymatium* is denominated a *sima-recta*; but when the convex part forms the greatest projection, it is a *sima-reversa*.

**CYM'BAL**, a musical instrument used by the ancients, hollow, and made of brass, supposed to be somewhat like a kettle-drum. The modern *cymbals* used in military bands consist of two concave metal plates, which are occasionally struck together and flourished above the head of the player.

**CYMBA'RIA**, in botany, a genus of plants, class 14 *Didynamia*, order 2 *Angiospermia*; so called from its boat-shaped fruit. The whole plant is hoary, and is distinguished from all others by its ten-toothed calyx.

**CYME**, literally, a sprout or shoot; also a sort of flowering, where the floreta do not all rise from the same point.

**CYM'OPHANE**, a mineral; called also *Chrysoberyl*. Its colour is green of different shades, and in hardness it ranks next to the sapphire.

**CYMO'SÆ**, the 63rd of the natural orders of Lynæus, comprehending such plants as are disposed in the form of a cyme.

**CYNAN'CHE**, among physicians, an inflammation of the larynx. It is of several kinds, and comprehends the quinsey, croup, and malignant sore throat.

**CYNAN'CHUM**, in botany, a genus of plants, which are all shrubs or undershrubs. The principal species are *Cynanchum viminale, Euphorbia, Apocynum*, &c.

**CYNANTHRO'PIA**, in medicine, the disease occasioned by the bite of a mad dog, wherein the patient avoids the light, and dreads the water.

**CYN'IC**, a man of a surly or snarling temper; a misanthrope.—The *Cynics* were a sect of ancient philosophers who valued themselves upon their contempt of riches and state, arts, sciences, and amusements.

**CYN'IPS**, the Gall-fly, a genus of insects, of which there are 35 species, chiefly found in the oak. The most beautiful gall is the production of the *cynips quercus gemma*, who piercing the terminal bud of the tree deposits its egg in the interior, and thereby, with the hatching and progressive growth of the larva, converts it from a healthy bud into a fine dark green gall, leafed like a rose-bud beginning to blow, about an inch in diameter, and held to the branch by a pedicle.

**CYNOCEPH'ALUS**, in zoology, a sort of ape with a head like a dog.

**CYNODON'TES**, in anatomy, dog-teeth, of which there are two in each jaw, one on each side betwixt the fore-teeth and the grinders.

**CYNOGLOS'SUM**, in botany, Hound's-tongue; a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*.

**CYNORRHO'DEN**, in botany, the dog-rose; also the flower of the red lily.

**CYNOREX'IA**, in medicine, a canine appetite.

**CYN'OSURE**, in astronomy, a constellation near the north pole, consisting of seven stars, four of which are disposed like the four wheels of a chariot, and three lengthwise, like the beam; hence called the chariot or Charles's wain.

**CYNOSU'RUS**, in botany, a genus of plants, class 3 *Triandria*, order 2 *Digynia*; natural order *Gramina*, or Grasses. The species are mostly perennials.

**CYPARIS'SÆ**, in antiquity, fiery meteors, or atmospherical phenomena appearing in the night.

**CY'PHONISM**, in Grecian antiquity, a punishment inflicted upon criminals, by fastening a collar of wood round their necks, by which their heads were kept bowed down.

**CY'PRESS TREE** [see CUPRESSUS]; the most remarkable are the *Sempervirens* or common cypress, the evergreen American cypress or white cedar, and the *Distichia* or deciduous American cypress.

**CYP'RINUS**, in ichthyology, a genus of fishes, including the carp, barbel, gudgeon, tench, gold-fish, chub, and several other fresh-water fish.

**CYRENA'ICS**, a sect of ancient philosophers, so called from their founder, Aristippus of Cyrene, a disciple of Socrates. The great principle of their doctrine was, that the supreme good of man in this life is pleasure.

**CYST**, a bag which contains morbid matter in animal bodies.—*Cystic oxyde*, a peculiar substance supposed to be generated in the kidneys.

**CYS'TICIS**, in medicine, inflammation in the bladder. According to Cullen, a genus of diseases in the class *Pyrexia*, order *Phlegmasiæ*.

**CYS'TIDES**, in medicine, encysted tumours, or such as have their substance included in a membrane.

**CYSTOCELE**, in surgery, a hernia or rupture formed by the protrusion of the urinary bladder.

**CYSTOTOMY**, the practice of opening encysted tumours for the discharge of morbid matter.

**CYTHA'RUS**, in ichthyology, a sea-fish of the turbot kind.

**CYT'ISUS**, in botany, the Laburnum, or Bean Trefoil-tree.—Also, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria*: the species of which are shrubs.

**CYZICE'NA**, in antiquity, a magnificent sort of banqueting-house, among the Greeks; so called from Cyzicus, a city famous for its sumptuous buildings.

**CZAR**, the title assumed by the emperors of Russia. The first that bore this title was Basil, the son of Basilides, under whom the Russian power began to appear, about 1470. The word is of old Sclavonic origin, and is nearly equivalent to *king*.

**CZARI'NA**, the title of the empress of Russia.



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infinitely beyond them. The Daguerreotypic drawings, or prints, or impressions, for we hardly know by which term to call them, are produced by the box or machine used in the exhibition of the camera obscura. The rays of light are collected into a focus, and brought to bear upon the substance upon which the desired representation is to be secured. In photogenic impressions this subject is prepared paper. In Daguerreotypic impressions it is a thin plate of copper, covered with a very thin lamina of steel, made to adhere to it by what is called technically 'dry rolling,' or compression. The surface of the silver is polished as bright as a mirror, and before being used the plate is heated to a slight degree, by a lamp, containing spirits of wine, being placed beneath it. This heating causes a voltaic action on the metals. The plate after cooling is rubbed with a preparation of sulphur, and polished very finely by pounce, triturated to an impalpable powder. The plate is then placed in a sort of box closely shut up, in which it undergoes a sort of fumigation from the vapour of iodine, during which operation, in length about twenty minutes, the room is darkened, and all rays of light carefully excluded. The plate being judged sufficiently prepared, is placed in the machine of the camera obscura, and retained there about the space of twenty minutes, at the expiration of which time on being removed, it presents no vestige of a picture, but appears bright, clear, and colourless. In this state it is placed in a box, having on one side a glass through which it may be seen. The box is fumigated with the vapour of mercury, to a heat of eighty-five degrees of the centigrade thermometer, commencing at forty-five degrees. After remaining in this box about ten or twelve minutes, the outline of a picture is perceivable through the glass; the details gradually develope themselves, and by twenty minutes a very beautiful representation is produced, in which there is a slight, certainly a slight, but yet obvious tint of colour. This representation is most accurate, and minute in every respect, and is an extraordinary miniature view of the large objects in actual existence. The plate is then washed with a slight chemical acid, and the process is perfected. The view taken on Friday was from the window of the residence of M. St. Croix; it was the south-western crescent of Regent-street; nothing could be more accurate. This invention has no quackery or secret whatever about it; we have described it as it appeared to us, but we have unavoidably omitted some of the details of the solutions applied to the plate; the whole operation requires little more than an hour. The plates employed were of French manufacture, and vastly inferior to what are made in England—they were what are called by the manufacturers 'puckered.' The invention will be of great use to engravers, as an engraving can at once be made on the plate, by passing the graver over the lines of the impression. It will be of great use to tourists and travellers in taking views of ancient buildings, ruins, &c., as the whole process is merely mechanical, and can be gone through without any chance of failure, by a person wholly ignorant of drawing, or the art of design."—[See PHOTOGENIC DRAWING.]

DAHLIA, the name of a genus of plants belonging to the natural order *Compositæ*, or compound flowers. It is a native of South America, but has of late years become common in our gardens; and is highly ornamental in the autumnal season, when other flowers are scarce. The root is perennial, composed of fascicles of tubes; the stem is straight, branching, and often upwards of six feet in height; the flowers are solitary, at the extremity of long branches, and by cultivation have been doubled, and made to assume a variety of colours. It is reproduced from the seed, or by the division of the roots, which is the most approved mode; and it requires frequent watering. In autumn the roots should be taken up, covered with dry sand, and kept out of the reach of the frost during the winter. The roots furnish the Mexicans with a wholesome article of food, though the taste is by no means pleasant.

DAIRY, a building appropriated to the purpose of preserving and managing milk, making butter, cheese, &c. Temperature in a dairy is of the first importance; for if too much heat be admitted, the milk will quickly become sour; and if too cold an atmosphere prevails, neither butter nor cheese making can be carried on with any success. Dairy farms, in general, consist chiefly of meadow and pasture, with only a small portion of the land under tillage; but it has of late years been proved that stall-feeding, with green crops, is most important in the management of cows; for in this way they can be kept in milk through the whole winter season.

DAIS, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The species are all deciduous shrubs.

DAISY, in botany, a plant of the genus *Bellis*, of several varieties.

DAGON, an idol of the Philistines, of the human shape upwards, and resembling a fish downwards, with a finny tail.

DAKER-HEN, a fowl of the gallinaceous kind, somewhat resembling a partridge or quail. Some say it is the same as the land-rail.

DAMAGE-FEASANT, in law, is when one person's beasts get into another's ground, without licence of the owner or occupier of the ground, and do damage by feeding, or otherwise, to the grass, corn, wood, &c. in which case the party injured may distrain or impound them.

DAMAGES, in law, the estimated equivalent for an injury sustained; or that which is given or adjudged by a jury to the plaintiff in an action, to repair his loss.

DAMASCENE (pronounced *dam'son*), a fruit tree, bearing a small plum, of an oval shape; the *Prunus Damascena*.

DAMASK, a silk stuff with a raised pat-

A PECULIAR ORE OF SILVER WAS DISCOVERED IN 1864, CALLED "ARGENT CORNE," WHICH BECAME BLACK ON EXPOSURE TO THE LIGHT.

THE GREATEST DAIRY FARMS IN ENGLAND ARE IN CHESHIRE, GLOUCESTERSHIRE, ESSEX, CAMBRIDGE, SUFFOLK, DORSET, AND SOMERSET.



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DATA, among mathematicians, a term used for such things and quantities as are given or known, in order to find other things therefrom, that are unknown. Euclid uses the word for such spaces, lines, and angles, as are of a given magnitude, or to which we can assign others equal.

DATE, that part of a writing or letter which expresses the day of the month and year ——*Date*, in law, is the description of the day, month, or year of our Lord; with the year of the reign of the king, in which a deed or other writing was executed.—— An *ante-date* is a date prior to the real time when the instrument was signed. A *post-date* is that posterior to the real time.

DATE-TREE, in botany, the *Phœnix dactylifera*, a species of palm which flourishes in North Africa and Western Asia, growing fifty, sixty, and sometimes one hundred feet high; distinguishing the landscape of those countries, and affording the inhabitants food, clothing, &c. The fruit is pulpy, firm, sweet, and esculent; and in it is enclosed a hard kernel.

DATH'OLITE, in mineralogy, the borate of lime, of which there are two sub-species, the common and the botryoidal.

DATISI, in logic, an arbitrary term for a mode of syllogisms in the third figure, wherein the major proposition is a universal affirmative, and the minor and conclusion are particular affirmatives.

DA'TIVE, in grammar, the third of the Greek and Latin nouns.

DATU'RA, in chemistry, a vegetable alkali obtained from *Datura stramonium*. ——Also, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*.

DAU'CUS, the Carrot, a well-known vegetable. Also, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*: the species are biennials or annuals.

DAU'PHIN, the title of the eldest son of the king of France. It is said that, in 1349, Humbert II., the last of the princes of Dauphiny, having no issue, gave his dominions to the crown of France, upon condition that the king's eldest son should be styled the *Dauphin*.

DAVID'S DAY, (St.) the 1st of March, kept by the Welsh in honour of St. David, bishop of Miney, in Wales; who at the head of their forces obtained a signal victory over the Saxons. It is the invariable custom of the Welsh to wear leeks in their hats on this day.

DAWN, the commencement of the day, when the twilight appears.

DAY, according to the most natural and obvious sense of the word, signifies that part of the twenty-four hours when it is light; or the space of time between the rising and the setting of the sun; the time which elapses from its setting to its rising again being considered the night. The word day is often taken in a larger sense, so as to include the night also; or to denote the time of a whole apparent revolution of the sun round the earth. The day is also distinguished into *civil* and *astronomical*. The civil day is a space of twenty-four hours, reckoned from sunset to sunset, or from sunrise to sunrise, which is different in different parts of the globe. The astronomical day is the space of twenty-four hours, reckoned from twelve o'clock at noon to the noon of the next day.——The *nautical day* ends at the instant the astronomical day begins; so that nautical time in days of the month, is always twenty-four hours in advance of astronomical time, and the civil day is midway between both.——The Babylonians began the day at sun-rising; the Jews at sun-setting; the Egyptians at midnight, as do several nations in modern times, the British, French, Spanish, American, &c.——*Days of grace*, in commerce, a customary number of days allowed for the payment of a bill after it becomes due. *Three* days of grace are allowed in Great Britain and America. In other countries the time allowed is much longer, but the merchants there very rarely avail themselves of the time.

DAY-FLY, in entomology, the *Ephemera* of Linnæus; an insect, so called from the shortness of its existence, which rarely exceeds a day.

DAY-LILY, in botany, the *Hemerocallis* of Linnæus; a plant so called because the beauty of its flower seldom lasts longer than one day.

DAY-COAL, a name given by miners to the upper stratum of coal.

DAY'-WRIT, or DAY'-RULE, in law, a rule or order in court permitting a prisoner in the Queen's Bench to go beyond the bounds of the prison for one day.

DAZE, in mineralogy, a kind of glittering stones, found in tin and lead mines.

DE'ACON, the lowest of the three orders of clergy (deacons, priests, and bishops) in the English church. The word is sometimes used in the New Testament for any one that ministers in the service of God; in which sense, bishops and presbyters are styled deacons: but, in its restrained sense, it is taken for the third order of the clergy. In the church of England, the form of ordaining a deacon declares that it is his office to assist in the distribution of the holy communion; in which, agreeably to the practice of the ancient church, he is confined to the administration of the wine to the communicants. A deacon is not capable of any ecclesiastical promotion; yet he may be chaplain to a family, curate to a beneficed clergyman, or lecturer to a parish church. ——In the Romish church, the deacon's office is to incense the officiating priest, to incense the choir, to put the mitre on the bishop's head at the pontifical mass, and to assist at the communion.——In Presbyterian and Independent places of worship, the deacons distribute the bread and wine to the communicants.——In Scotland, an overseer of the poor, or the master of an incorporated company, is styled a *deacon*.

DE'ACONESS, a female deacon in the primitive church. This office appears as ancient as the apostolic age; for St. Paul calls Phœbe a servant of the church of



IN SOME COUNTRIES, THE STONES OF DATES ARE GROUND TO MAKE OIL, AND THE PASTE OR CAKE IS GIVEN AS FOOD TO CATTLE.

OUR NAMES OF THE DAYS OF THE WEEK WERE INTRODUCED BY THE SAXONS, WHO DERIVED THEM FROM THE SCANDINAVIAN MYTHOLOGY.

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FOR EVERY CREDITOR THERE MUST BE A DEBTOR, AND FOR ALL OSTENTATIOUS EXPENDITURE, THERE MUST BE EQUIVALENT PRIVATION.

IN THE DIVISIONS OF MONEY AND MEASURES BE IN A DECIMAL RATIO, THE BASE OF CALCULATION IS VERY GREATLY INCREASED.

also denotes a sort of bill drawn upon the government.

**DEB'IT**, a term used in book-keeping to express the left hand page of the ledger, to which all articles are carried that are charged to an account.

**DÉBOUCH'**, in military language, to issue or march out of a narrow place, or from defiles.

**DEBRIS** (pron. *debree'*) ruins or rubbish; applied particularly to the fragments of rocks.——The word *debris* is also used by the French to express the remains or wreck of an army that has been routed.

**DEBOU'CHEMENT**, a French term for the marching of an army from a narrow place into one that is more open.

**DEBT**, in law, that which is due from one person to another, whether it be money, goods, or services.——In law, used elliptically for an action to recover a debt.——In scripture, sin; that which renders liable to punishment; as, "forgive us our *debts*."——*National Debt*, the engagement entered into by a government to repay at a future period money advanced by individuals for public service, or to pay the lenders an equivalent annuity.

**DEC'ACHORD**, or **DECACHORD'ON**, a musical instrument of ten strings.

**DEC'AGON**, in geometry, a plane figure with ten sides and ten angles.

**DEC'AGRAM**, a French weight of ten grams, or 154 grains, 44 decimals.

**DEC'AGYN**, in botany, a plant having ten pistils.

**DECAHE'DRON**, in geometry, a figure or body having ten sides.

**DEC'ALITER**, a French measure of capacity, containing ten liters, or 610,28 cubic inches.

**DEC'ALOGUE**, the ten commandments or precepts delivered by God to Moses, at Mount Sinai, originally engraved on two tables of stone. The Jews, by way of excellence, call these commandments The Ten Words, whence they afterwards received the name of *decalogue*.

**DECAM'ERON**, a work containing the actions or conversations of ten days. Boccacio's Decameron consists of one hundred tales related in ten days.

**DECAM'ETER**, a French measure of length, consisting of ten meters, and equal to 393 English inches, and 71 decimals.

**DECAPH'YLLOUS**, in botany, an epithet for plants having ten leaves.

**DEC'ASTICK**, a poem consisting of ten lines.

**DEC'ASTYLE**, in architecture, a building with an ordnance of ten columns in front.

**DECEMDEN'TATE**, having ten points or teeth.

**DECEMLOC'ULAR**, in botany, having ten cells for seeds.

**DECEM'BER**, the last month of the modern year, consisting of thirty-one days; when the sun enters the tropic of Capricorn, and makes the winter solstice. It was so called from being the tenth month in the Roman year, which began with March.

**DECEM'VIRI**, ten magistrates elected by the Roman people, and invested with the power of administering the laws of the twelve tables, which were compiled at the time of their creation. The *decemviri* were introduced by the popular power to counteract the privileges of the patricians; but their misbehaviour caused the same power to procure their abolishment in the third year of their *decemvirate*.

**DECAN'DRIA**, the tenth class of the Linnæan system of plants, containing six classes, *Monogynia*, *Digynia*, *Trigynia*, *Tetragynia*, *Pentagynia*, and *Decagynia*, with ten stamens.

**DEC'ENNARY**, in law, a tithing consisting of ten freeholders and their families. Ten of these decennaries constituted a *hundred*, the origin of which is ascribed to Alfred.

**DE'CEM PRI'MI**, or **DE'CEM PRIN'CIPES**, in Roman antiquity, the ten chief men or senators of every city or borough.

**DECI'DENCE**, in medicine a decay or tendency to any disease.

**DECID'UOUS**, an epithet chiefly used in botany; as, *deciduous leaves*, those which fall in autumn, in distinction to those of evergreens. The calyx or cup of a flower is also said to be *deciduous* when it falls, or decays, along with the flower-petals, while on the contrary, it is called *permanent* when it remains after these are fallen.

**DEC'IGRAM**, a French weight of one-tenth of a grain.

**DEC'ILITER**, a French measure of capacity, equal to one-tenth of a liter.

**DECIM'ETER**, a French measure of length, equal to the tenth part of a meter.

**DE'CIMAL ARITH'METIC** a kind of calculation in which no other fractions are used than tenths, hundredths, &c. which are consequently called *decimal fractions*, and afford great facilities in calculation.

**DECIMA'TION**, a punishment inflicted by the Romans on such soldiers as quitted their post, or behaved themselves ill in the field. The names of all the guilty were put into an urn or helmet, from which a tenth part only were drawn, whose lot it was to suffer death.

**DECK**, the planked floor of a ship from stem to stern. Small vessels have only one deck; larger ships have two or three decks. Thus, speaking of the size of a large ship, we say, she is a *two-decker*, or a *three-decker*.

**DECK'ED**, in heraldry, a term applied to an eagle, or other birds, when their feathers are trimmed at the edges with a small line of another colour.

**DECLAMA'TION**, the act of speaking to a public audience with energy and grace; and may be either a discourse addressed to the reason or to the passions. Among the Greeks, declamation was the art of speaking indifferently on all subjects, and on all sides of a question. With us it is more especially applied to the speeches of students in colleges, practised for exercises in oratory. The term is, however, often used contemptuously, to denote a noisy harangue;



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THE FORMAL PARTS OF A DEED ARE THE PREMISES, THE COVENANTS, AND THE CONCLUSION WHICH MENTIONS THE EXECUTION AND DATE.

**DECUSSA'TION**, a term in geometry, optics and anatomy, signifying the crossing of any two lines, rays, or nerves, when they meet in a point, and then go on separately from one another.

**DECUS'SATE**, or **DECUS'SATED**, in botany, an epithet for such leaves and branches as grow in pairs which alternately cross each other at right angles, or in a regular manner.——In rhetoric, a *decussated* period is one that consists of two rising and two falling clauses, placed in alternate opposition to each other.

**DED'ALOUS**, a botanical term applied to leaves of a delicate texture, whose margin is marked by various windings and turnings.

**DEDICA'TION**, the act of consecrating, or solemnly devoting, any person or thing, to the service of God, and the purposes of religion.——*Feast of Dedication*, an anniversary festival among the Jews, in memory of Judas Maccabæus, who repaired and dedicated anew the temple and altar, which had been plundered and profaned by Antiochus Epiphanes. It was observed on the twenty-fifth of Cisleu, and continued eight days.

**DEDUC'TOR**, a client amongst the Romans, who called upon his patron at his lodgings in the morning, waited upon him from thence to the forum, and attended him upon all public occasions.

**DEED**, in law, a written contract, sealed and delivered. It must be written before the sealing and delivery, otherwise it is no deed; and after it is once formally executed by the parties, nothing can be added or interlined; and, therefore, if a deed be sealed and delivered with a blank left for the sum, which the obligee fills up after sealing and delivery, this will make the deed void. Every deed must be founded upon good and sufficient consideration; not upon an usurious contract, nor upon fraud or collusion, either to deceive *bona fide* purchasers, or just and lawful creditors; any of which considerations will vacate the deed. It takes effect only from the day of delivery; and, therefore, if a deed have no date, or a date impossible, the delivery will in all cases ascertain the date of it. The delivery of a deed may be alleged at any time after the deed; but unless it be sealed and regularly delivered, it is no deed. And lastly, it must be properly witnessed or attested; which, however, is necessary rather for preserving the evidence, than as intrinsically essential to the validity of the instrument.

**DE FACTO**, in law, something actually in fact, or existing, in contradistinction to *de jure*, where a thing is only so in justice, but not in fact; as a king *de facto* is a person that is in actual possession of a crown, but has no legal right to the same; and a king *de jure* is the person who has a just right to the crown, though he is not in possession of it.

**DEFAMA'TION**, the malicious uttering of falsehood with a view to injure another's reputation. Defamatory words written and published constitute a *libel*.

**DEFAULT'**, in law, a non-appearance in court without assigning sufficient cause.——*Defaulter*, one who fails to account for public money entrusted to his care.

**DEFE'ASANCE**, in law, a condition relating to a deed, which being performed, the deed is defeated and rendered void. A *defeasance*, or a bond, or a recognisance, or a judgment recovered, is a condition which, when performed, *defeats* it.

**DEFECATION**, the act of separating from lees or dregs.

**DEFEN'CE** in law, the reply which the defendant makes after the declaration is produced.——In military affairs, any work that covers or defends the opposite posts, as flanks, parapets, &c.

**DEFEND'ANT**, in law, the party that is summoned into court, and *defends*, denies, or opposes the demand or charge, and maintains his own right. It is applied whether the person defends, or admits the claim and suffers a default.

**DEFI'LE**, a narrow way, or pass, through which a company of soldiers can march only in file.

**DEFINI'TION**, the determining the nature of things by words; or a brief description of a thing by its properties. It is generally effected by adding to a generic word the essential and peculiar qualities or circumstances of the thing to be defined; but a strictly accurate definition cannot always be given; and the most simple things are generally the least capable of definition, from the difficulty of finding terms more simple and intelligible than the one to be defined.

**DEFIN'ITIVE**, a term applied to whatever terminates a process, question, &c. in opposition to provisional and interlocutory.——In grammar, a word used to define or limit the extent of the signification of an appellative or common noun.

**DEFLAGRA'TION**, rapid combustion, or the act of burning two or more substances together, as charcoal and nitre.

**DEFLEX'ION**, the turning anything out of its due course; as the tendency of a ship out of her due course by reason of currents, &c.——*Deflexion of the rays of light*, in optics, a property (called by Newton *inflexion*) distinct from reflection and refraction, being made perpendicularly towards the opaque body.

**DEFLEX'UN**, in botany, an epithet for a leaf when bowed or bent down like an arch.

**DEFLORA'TUS**, in botany, an epithet for a flower which has discharged its pollen.

**DEFLU'VIUM**, in botany, a disease in trees whereby they lose their bark.——*Defluvium capillorium*, in medicine, a preternatural falling off of the hair.

**DEFLUX'ION**, in surgery, the falling or flowing of humours from a superior to an inferior part of the body; as a defluxion from the nose or head in catarrh.

**DEFOLIA'TION**, the shedding of leaves; a term technically applied to the autumnal season, when the leaves of trees and shrubs are shed.

TO MARCH BEFORE ANY ONE WITH A NARROW FRONT, THAT IS "BE COLONNE," OR BY FILES, IS ALSO CALLED "DEFILING."



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to Delphi, and to the celebrated oracle there.

DELPH'INITE, a mineral called also *pistacite*.

DELPHIN'IUM, in botany, LARKSPUR, a genus of plants, class 12 *Polyandria*, order 3 *Trigynia*.

DELPHI'NUS, a genus of animals, class *Mammalia*, order *Cetæ*, consisting of the dolphin, the porpoise, and the sword grampus. The dolphin is described by the ancients as the swiftest of all animals either by land or sea, and, according to Aristotle, so agile in leaping, that it would clear ships.——*Delphinus*, in astronomy, is a constellation in the northern hemisphere; for among the fictions of the ancient poets, is one which states that the dolphin was translated to the celestial regions by Neptune.

DEL'TOID, in anatomy, a thick triangular muscle of the arm, being one of the three elevators.——Also, a term for any thing having three angles, of which the terminal one is much further from the base than the lateral ones.

DEL'UGE, an inundation or overflowing of the earth, either wholly or in part, by water.——We have several deluges recorded in history, as that of Ogyges, which overflowed almost all Attica, and that of Deucalion, which drowned all Thessaly, in Greece: but the most memorable was that called the universal deluge, or Noah's flood, from which only Noah and those with him in the ark, escaped. This flood makes one of the most considerable epochas in chronology. Its history is given by Moses in the book of Genesis, ch. vi. & vii. and its time is fixed to the year from the creation 1656. From this flood, the state of the world is divided into "diluvian" and "anti-diluvian."

DEMAIN', or DEME'SNE, in law, a manor-house and the lands thereunto belonging, which the lord of the manor and his ancestors have time out of mind kept in their own occupation. It denotes also all the parts of any manor not in the hands of freeholders; and is frequently used for a distinction between those lands that the lord has in his own hands, or in the hands of his lessee demised at a rack-rent; or such other land appertaining to the manor, which belongs to free or copyholders.

DEM'AGOGUE, any factious orator who acquires great influence with the populace; whom he flatters, cajoles, or leads into danger, as best suits his purpose.

DEMAND'ANT, in law, the pursuer in real actions, in distinction from the plaintiff.

DEMARCA'TION, LINE OF, every line drawn for determining a border, which is not to be passed by foreign powers, or by such as are at war with each other.

DEM'I, a half-fellow at Magdalen College, Oxford.——Also, a term in composition, signifying half; as, *demigod*, a hero who was enrolled among the gods.

DEM'I-CADENCE, in music, an imperfect cadence, or one that falls on any other than the key note.

DEM'I-CROSS, an instrument for taking the altitude of the sun and stars.

DEMI-CUL'VERIN, a piece of ordnance, the least of which is ten feet long, and carries a ball of nine pounds weight.

DEM'I-GORGE, in fortification, that part of the polygon which remains after the flank is raised, and goes from the curtain to the angle of the polygon.

DEM'I-QUAVER, a note in music, of half the length of the quaver.

DEM'I-VOLT, one of the seven artificial motions of a horse, in which he raises his fore-legs in a particular manner.

DEMI'SE, in law, is applied to an estate either in fee, for term of life or years, though most usually the latter.——The death of a king, or a queen regnant, is termed the demise of the crown, by which is implied a transfer of the royal authority or kingdom to a successor——*Demise and redemise*, a conveyance where there are mutual leases made from one to another of the same land, or something out of it.

DEMOC'RACY, a form of government, in which the supreme power is lodged in the hands of the people collectively, or in which the people exercise the powers of legislation.

DE'MON, or DÆ'MON, a name used by the ancients for certain supernatural beings, whose existence they supposed. They were spirits or genii who appeared to men, either to do them service or to hurt them. The Platonists distinguish between gods, demons, and heroes; the demons being those since called angels. Socrates and Tasso spoke, in very distant ages, of being each attended by a demon or familiar. In Tasso, this pretension has been referred to an hypochondriacal state of mind; in Socrates, the matter has given rise to much speculation. From the manner, however, in which the philosopher is said to have described his *demon*, there seems good reason to believe that he spoke figuratively of his natural conscience or intellect: "it directed him how to act in every important occasion of life, and restrained him from imprudence of conduct." The demons of the New Testament were supposed to be spiritual beings which vexed and tormented men. And in general, the word, in modern use, signifies an evil spirit or genius, which influences the conduct or directs the fortunes of mankind.

DEMO'NIAC, a human being whose volition and other mental faculties are overpowered, restrained, or disturbed, in their regular operation, by an evil spirit.——In church history, the term *Demoniacs* is given to a branch of the Anabaptists, whose distinguishing tenet is, that at the end of the world the devil will be saved.

DEMONOC'RACY, the power or government of demons.

DEMONOL'OGY, a treatise on demons or evil spirits. Demonology in our Saviour's time was no inconsiderable part of philosophy. Thus the Greeks imputed madness sometimes to the agitation and agency of Furies, and sometimes to the influence of Diana or the moon. The Romans thought



THE ALTERNATE DEPOSITS OF TERRESTRIAL AND MARINE PRODUCTIONS ON THE EARTH, ARE THE EFFECT OF REPEATED DELUGES.

THE DELPHIC ORACLE SERVED TO REGULATE AND UPHOLD THE POLITICAL, CIVIL, AND RELIGIOUS RELATIONS OF ANCIENT GREECE.

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DEN'TAL, an articulation or letter formed by placing the end of the tongue against the upper teeth, or nearer the roof of the mouth, as in *d* and *t*.

DENTA'LIUM, in ichthyology, a genus of shell-fish, the shell consisting of one tubulous straight valve, open at both ends.

DENTALITE, a fossil shell of the genus *Dentalium*.

DENTATE, or DENTATED, in botany, an epithet for a root that consists of a concatenation of joints, resembling a necklace; or for a leaf having points like teeth on the margin.

DENTA'TO-SIN'UATE, having points like teeth with hollows about the edge.

DEN'TES SAPIENTIÆ, or Wisdom Teeth, a term applied to the two most backward double-teeth; so called because they come when persons have arrived at years of maturity.

DENTICULATE, in botany, having small teeth or notches; as a denticulate leaf, calyx, or seed.

DENTICULATION, the state of being set with small teeth, like a saw.

DEN'TIFRICE, any powder or other substance used for cleaning the teeth.

DEN'TIL, in architecture, an ornament in cornices, bearing some resemblance to teeth; used particularly in the Corinthian and Ionic orders.

DEN'TOID, having the form of teeth.

DENUDA'TION, in geology, the act of washing away the surface of the earth by a flood.

DEOB'STRUENT, any medicine which removes obstructions and opens the natural passages of the fluids of the body.

DE'ODAND, a personal chattel which has been the immediate occasion of the death of a rational creature, and for that reason is *given to God*; that is, forfeited to the king, to be applied to pious uses.

DEOX'YDATE, or DEOX'YDIZE, in chemistry, to deprive of oxygen, or reduce from the state of an oxyde.

DEPART'MENT, either a division of territory, as the *departments* of France; or a distinct class of official duties allotted to a particular person.

DEPHLOGIS'TICATED AIR, a term applied by Dr. Priestley, and others, to what is now called *oxygen gas*, when he first discovered it. It was denominated by Scheele, who discovered it about the same period, vital air.

DEPLOY, the spreading of troops; a military term.

DEPO'NENT, in law, one who gives written testimony under oath to interrogatories exhibited in the court of Chancery.

DEPORTA'TION, a sort of banishment among the Romans, to some island or other place which was allotted to a criminal for the place of his abode, with a prohibition not to leave it, on pain of death.

DEPOS'IT, among civilians, something that is committed to the custody of a person, to be kept without any reward, and to be returned again on demand.

DEPOSI'TION, in law, the testimony given in court by a witness, upon oath.——*Deposition*, the settlement of substances dissolved in fluids; as, banks are sometimes called *depositions* of alluvial matter.——Also, the act of dethroning a king; or divesting any one in authority of his power and dignity.

DEPOT, a French word for a store or magazine for depositing goods or merchandise.

DEPRES'SION, *of the sun, or a star*, in astronomy, is its distance at any time below the horizon, measured by an arc of the vertical circle.——*Depression of the pole*, a phenomenon which arises from the spherical figure of the earth; thus, when a person sails or travels towards the equator he is said to depress the pole, because as many degrees as he approaches nearer the equator, so many degrees will the pole be nearer the horizon.—— *Depression of an equation*, in algebra, the reducing an equation to lower degrees, as a biquadratic to a cubic equation, or a cubic to a quadratic.

DEPRESSO'RIUM, a surgical instrument used for depressing the *dura mater* after the operation of trepanning.

DEPRES'SOR, in anatomy, a name applied to several muscles, because they depress the parts to which they are attached.

DEPRES'SUS, in botany, an epithet for the leaves of succulent plants which are hollow or depressed in the middle.

DEPRIVA'TION, an ecclesiastical censure, by which a clergyman is deprived of his dignity.

DEPURATION, the act of purifying or freeing fluids from heterogeneous matter. This is done either by decantation, when the feculent matter is deposited in the bottom of the vessel; by boiling and skimming; by filtration; or by clarification.

DEPUTA'TI, in antiquity, persons who attended the army for the purpose of carrying away the wounded from the field of battle and waiting on them. The armourers were also sometimes called *deputati*.

DEPUTY, in a general sense, signifies a person appointed or elected to act for another; or who is sent upon some business by a community.——In law, a *deputy* is one who exercises an office in another's right; and, properly, the misdemeanor of such deputy shall cause the person he represents to lose his office.——By a *deputation* is generally understood, the person or persons authorized and sent to transact business for others, either with a special commission and authority, or with general powers.

DERELICTS, in law, such goods as are wilfully relinquished by the owner. It also signifies a thing forsaken, or cast away by the sea: thus, lands which the sea has suddenly left are called *derelict lands*; and vessels forsaken at sea are called *derelict ships*.

DERIV'ATIVE, in grammar, any word derived (*i. e.* taking its origin) from another, called its *primitive*; as *manhood* from *man*, &c.

IN ALL INDICTMENTS FOR HOMICIDE, THE INSTRUMENT THAT IMMEDIATELY CAUSED THE DEATH, AS WELL AS ITS VALUE, IS SPECIFIED.

THOUGH BY HOMICIDE A FINE IS INCURRED TO THE KING, NO FORFEITURE CAN BE CLAIMED UNLESS A DEODAND IS AWARDED BY A JURY.



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THE ESSENCE OF A "DEVICE" CONSISTS IN METAPHORICAL SIMILITUDE BETWEEN THE THINGS REPRESENTED AND REPRESENTED.

ment, it differs little from animal appetite.

DESMOL'OGY, that branch of anatomy which treats of the ligaments and sinews.

DES'POTISM, a form of government where the monarch rules by his sole and uncontrolled authority.

DESPOUILLE', in heraldry, the whole case, skin, or slough of a beast, with the head, feet, tail, &c., so that being filled and stuffed, it looks like the entire animal.

DESFUMA'TION, a term for clarifying a liquor, by skimming off its froth or excrementitious matter.

DESQUAMA'TION, in anatomy, an exfoliation of bone: also the separation of the cuticle in small scales.

DESUDA'TION, in medicine, a profuse and inordinate sweating, succeeded by an eruption of pustules, called heat-pimples.

DES'UETUDE, the cessation of use, or discontinuance of any practice.

DESULPHURA'TION, in chemistry, the act or operation of depriving of sulphur.

DETACH'MENT, a body of troops selected or drawn out from several regiments or companies, on some special service or expedition. Also, a number of ships, taken from a fleet, and sent on a separate service.

DETENTS', in clock-work, are those stops, which, by being lifted up or let down, lock or unlock the clock in striking.

DETER'GENTS, or DETER'SIVES, medicines which have the power to remove viscid humours, or cleanse the skin of impurities.

DETERMINA'TION, in physics, the tendency of a body in any particular direction.

DETERRA'TION, the uncovering of any thing buried or hidden in the earth.

DET'INUE, in law, a writ or action that lies against a person who has goods or other things delivered to him to keep, and who afterwards *detains*, or refuses to deliver them up.

DETONA'TION, or DETONIZA'TION, an explosion, or sudden report made by the percussion and inflammation of certain combustible substances. —— *Detonating Powder*, a composition of charcoal, sulphur, and oxymuriate of potass, which may be inflamed by the heat generated by percussion.

DETRI'TUS, in geology, a mass of substances detached or worn off from solid bodies by attrition; as, diluvial detritus, or the strata which are supposed to have been washed from primitive mountains at the time of the deluge.

DEUTERON'OMY, one of the sacred books of the Old Testament, or the fifth book of the Pentateuch. It is so called, because this last part of the work of Moses comprehends a recapitulation of the law he had before delivered to the Israelites himself.

DEU'TERO-CANON'ICAL in theology, a term applied to certain books of Scripture which were added to the canon after the rest; either because they were not written till after the canon was compiled, or in consequence of some controversy in regard to their canonicity.

DEUTOX'ID, in chemistry, a substance oxydised in the second degree.

DEVAPORA'TION, the change of vapour into water, as in the generation of rain.

DEVI'SE, in law, is the disposition of real estate by will; being distinguished from a bequest of personal estate, that being termed a *legacy*. The person to whom a devise is made is called *devisee*.

DEVI'CE, in painting, an emblem or representation of any thing, with a motto subjoined or otherwise introduced. In heraldry, a name common to all figures, ciphers, characters, rebuses, mottoes, &c. which by its allusions to the names of persons, families, &c. denotes their qualities, nobility, or the like. Badges, impresses, and devices, were greatly in vogue in England, from the reign of Edward I. to that of Elizabeth, when they began to be disused.

DE'VIL, the chief of the apostate angels; Satan, the Tempter of the human race.

DEW, the moisture which is first exhaled from the earth by the sun, and afterwards deposited on the earth in gentle drops during the night, particularly after a hot day; for the heat of the sun having converted all the liquid matter on the earth's surface into aqueous gas, the atmosphere is, in a manner, completely saturated with it.

DEW'LAP, the loose skin that hangs from the throat of an ox, cow, &c.

DEW'-WORM, in entomology, the *Lumbricus terrestris* of Linnæus, an insect often found in decayed wood, as well as in the earth, and which is very destructive to plants.

DEX'TER, the right, or on the right hand or side; as the *dexter point*, in heraldry; by which is meant the right-hand side of the escutcheon.

DEY, the title of the supreme governor in Algiers, Tunis, and the other Barbary states.

DIABE'TES, in medicine, an excessive and morbid discharge of urine.

DIACHALA'SIS, in medicine, a relaxation of the suture of the cranium.

DIACHRI'STA, medicines applied to the fauces, palate, &c. for the abstersion of phlegm.

DIACH'YLON, in medicine, an emollient digestive plaster.

DIACOUS'TICS, the science of refracted sounds, called also *diaphonics*.

DIACOUS'TIC CURVE, in mathematics, a kind of curve caused by the refraction of rays in a particular direction, so as to form a given ratio with lines which meet them.

DIA'CRII, in Grecian antiquity, an appellation given to a faction at Athens, who favoured oligarchy; in opposition to the *pediaci*, who were for a pure democratical government.

DIA'CRISIS, in medicine, the act of distinguishing diseases one from another by their symptoms.

THE DROPS WHICH ARE OFTEN SEEN HANGING ON LEAVES AT SUNRISE, ARE NOT PRODUCED BY DEW, BUT ARE CONDENSED TRANSPIRATION.



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A DIAMOND IS SAID TO BE OF THE FIRST WATER, BECAUSE IT IS PERFECTLY TRANSPARENT, AND FREE FROM THE SLIGHTEST IMPURITY.

whence diamonds are brought are the island of Borneo, and the kingdoms of Visapour, Golconda, Bengal, in the East Indies; and the Brazils, in the West Indies. These gems consist of pure carbon, with a specific gravity of 3·5; and the hardest tools making no impression on them, they are cut and ground by the powder of their own substance. In the experiments of modern chemists, the diamond has been reduced to ashes by the power both of the furnace and the burning-glass.——*Rough Diamond*, is the stone as it comes from the mines.——*Rose Diamond*, is one which is quite flat underneath, with its upper part cut in numerous little faces, usually triangles, the uppermost of which terminate in a point.——*Table Diamond*, is that which has a large square face at top, encompassed with four lesser.——*Brilliant Diamond*, is that which is cut in faces both at top and bottom; and whose table or principal face is flat.——*Diamonds* are valuable for many purposes. Their powder is the best for the lapidary and gem engraver, and more economical than any other material for cutting, engraving, and polishing hard stones. Glaziers use them for cutting their glass; their diamond being set in a steel socket, and attached to a small wooden handle. It is very remarkable, that only the point of a natural crystal can be used; cut or split diamonds scratch, but the glass will not break along the scratch, as it does when a natural crystal is used. The diamond has also of late years become an article of great value to engravers, particularly in drawing or ruling lines, which are afterwards to be deepened by aqua fortis; for which steel points, called etching needles, were formerly used.

DI'AMOND BEETLE, a beautiful insect, so called from the marks on its wing-sheaths, which appear as brilliant as gems.

DIAN'Æ AR'BOR, silver and quicksilver dissolved in nitric acid, the crystalizations resembling a tree.

DIAN'DRIA, the second class of the Linnæan system of plants, containing three orders, *Monogynia*, *Digynia*, and *Trigynia*, with two stamens.

DIANŒ'A, in rhetoric, a figure of speech by which a correct interpretation is given to a subject suitable to the occasion.

DIAN'THUS, in botany, the PINK, a genus of plants, class 10 *Decandria*, order 2 *Digynia*.

DIAPA'SON, in music, a musical interval, by which most authors, who have written upon the theory of music, use to express the octave of the Greeks. The diapason is the first and most perfect of the concords; if considered simply, it is but one harmonical interval; though, if considered diatonically, by tones and semitones, it contains seven degrees, viz. the three greater tones, two lesser tones, and two greater semi-tones.—— *Diapason*, the fundamental or standard scale by which musical instruments are made.

DIAPEN'TE, in music, a fifth; an interval making the second of the concords, and with the diatessaron, an octave.——In medicine, a composition of five ingredients.

DI'APER, a kind of figured linen cloth, much used for towels or napkins.

DI'APHRAGM, in anatomy, a large muscular membrane or skin placed transversely in the trunk, and dividing the thorax from the abdomen.

DIAPH'ANOUS, an appellation given to all transparent bodies, or such as transmit the rays of light.

DIAPH'ORA, in rhetoric, a figure of speech, in which a word, when repeated, is taken in a different sense from what it was at first understood.

DIAPHORE'SIS, in medicine, augmented perspiration.

DIAPHORETICS, medicines which promote perspiration. *Diaphoretics* differ from *sudorifics*; the former only increase the insensible perspiration, the latter excite the sensible discharge called *sweat*.

DIAPOR'ESIS, in rhetoric, a figure of oratory, expressive of the speaker's doubt or hesitation as to the manner in which he should proceed in his discourse, the subjects he has to treat of being all equally important.

DIARRHŒ'A, a disorder which consists in a frequent and copious discharge of a bilious humour from the intestines.

DIARTHRO'SIS, in anatomy, a kind of articulation, or juncture of the bones, in which there is an evident motion.

DI'ARY, a register of daily occurrences and observations; or an account of what passes in the course of a day.

DI'ASCHISM, in music, the difference between the comma and enharmonic diesis, commonly called the lesser comma.

DIA'SIA, in Grecian antiquity, a festival kept at Athens in honour of Jupiter the *Propitious*.

DI'ASPORE, a mineral of a pearly gray colour, and infusible.

DIASTAL'TIC, an epithet given by the Greeks to certain intervals in music, as the major third, major sixth, and major seventh.

DIAS'TASIS, a term used by ancient physicians for a distension of the muscles, or separation of the bones.

DIAS'TEMA, in rhetoric, a modulation of the tones of the voice, by marking with precision the intervals between its elevation and depression.——In *music*, a space or interval.

DIAS'TOLE, among physicians, a dilatation of the heart, auricles, and arteries; it stands opposed to *systole*, or contraction of the same parts.——*Diastole*, in grammar, a figure of prosody, by which a syllable naturally short is made long.

DI'ASTYLE, an edifice in which three diameters of a column are allowed for the intercolumniations.

DIASYR'MOS, in rhetoric, a kind of hyperbole, being an exaggeration of something low and ridiculous; ironical praise.

DIATES'SARON, in music, a concord or harmonic interval composed of a greater tone, a lesser tone, and one greater semitone. Its proportion is as 4 to 3, and it is

THE GREAT PYRAMID OF EGYPT, COMPOSED OF GRANITE, IS FIVE HUNDRED FEET HIGH, AND STANDS ON ELEVEN ACRES OF GROUND.



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DIONYSI'ACA, a name given by the Grecians to all theatrical entertainments or diversions of the stage, because playhouses were sacred to Bacchus and Venus, the deities of sport and pleasure.

DIOP'SIDE, a rare mineral, of a pale green colour, occurring in prismatic crystals, and regarded as a variety of *augite*.

DIOPTRICS, the science of refractive vision; or that part of optics which considers the different refractions of light in passing through different mediums, as air, water, glass, &c. It demonstrates the different directions in which the rays of light move, according as they are broken on plane or curved substances; and the principles deduced from these observations determine the nature of the various lenses, explain the manner in which the light is refracted in the human eye, and teach the manner of seeing through lenses, and the composition of them, consequently the theory of telescopes, magnifying glasses, &c. By its aid, therefore, the eye has been enabled to reach objects previously unknown, and thus to obtain immense advantages in pursuing the science of astronomy.

DIORAM'A, the name of a building erected in the Regent's Park, London, in which a novel and very beautiful mode of depicting scenery is exhibited; also the name given to the method of delineating it. "The advantage which this mode of representing the face of nature possesses over any other yet invented is, that it causes the light to play at will all over the picture, so that the spectator can hardly help imagining himself placed on the very spot, when he perceives the rays of the sun now lighting up one range of mountains, now another, and beholds them peeping out from behind masses of clouds, which gradually become overcast as if with rain, and then the lowering effect giving way in its turn to bright gleams of sunshine—which enlighten the bosoms of the distant lakes, glitter upon the purling brooks, and then die away behind the darker skirts of the surrounding woods and thickets. All this is produced by a mode of uniting transparent painting to the usual opaque method, and causing the daylight to fall upon the picture, both from before and behind. At the same time, while by means of coloured transparent blinds, suspended both above and behind the picture, and which are put in motion by means of machinery, the rays of light can be intercepted and made to fall at pleasure in graduated tints upon every part of the picture in succession." The Diorama contains two pictures; of these one only is seen at a time, and the scene is changed by causing the saloon containing the spectators to revolve on its axis. The number and colour of the moveable blinds must be determined by the judgment and skill of the artist. Each picture occupies several thousand square feet of canvas; and a succession of novelties are always in preparation to gratify the lovers of scenic exhibitions.

DIOSCO'REA, in botany, a genus of plants, class 22 *Dioecia*, order 6 *Hexandria*. The species are perennials: there is no corolla in either the male or female flowers; and the fruit is a compressed large capsule, of a triangular form, containing three valves, and divided into three cells.

DIOSCU'RIA, in antiquity, a festival observed by the Spartans in honour of Castor and Pollux.

DIOSPYROS, in botany, a genus of plants, class 23 *Polygamia dioecia*, order 2 *Octandria monogynia*. The species are trees, varieties of the plum.

DIP, the depression of a magnet below the horizontal plane.——In geology, the *dip of a stratum* is its greatest inclination to the horizon, or that on a line perpendicular to its direction or course.

DIPET'ALOUS, in botany, an epithet for a corolla having two petals only.

DIPH'THONG, the union of two vowels pronounced in one syllable. The sound is not simple, but so blended as to be considered as forming but one syllable, as *noise, bound, joint*, &c.

DIPH'YLLOUS, in botany, an epithet for a calyx, &c. having two leaves.

DIP'LOE, in anatomy, the medullary substance, or porous part between the laminæ or plates of the skull.

DIPLO'MA, a written document conferring some power, privilege, or honour; viz. an instrument or licence given by colleges, societies, &c. to a clergyman to exercise the ministerial function, or to a physician to practise the profession, &c. after passing examination, or admitting him to a degree. ——In chemistry, "to boil in diploma," is to put the vessel which contains the ingredients into a second vessel, to which the fire is applied.

DIPLO'MACY, the customs, privileges, and practice of public business by ambassadors, envoys, and other representatives of princes and states at foreign courts. It has been truly observed, that in times not very distant, it was sufficient to entertain a royal master by the gossip of a capital, the intrigues of ladies and gentlemen of the bed-chamber, and the cabals of rival ministers. Now, the political correspondent of a cabinet is compelled to enquire into the working of the complex machinery of modern society; to observe constantly the pulse of the whole body politic; to keep in view the moral and physical resources of nations; to defend the rights of his country, on the grounds of law and reason; to give information to the minister, from whom he holds his instructions, and to enable his government to profit by the intelligence he imparts, not only in the management of its foreign concerns, but likewise of its internal resources. To be a perfect diplomatist, in fact, in the present state of the world, a man should be well acquainted with the municipal laws of different countries, versed in the sciences, from which industry and arts derive their splendour and a state its strength, and equal to any of the tasks to which those with whom he is brought into contact might put his learning and saga-



THE ANCIENTS TREATED DISTINCTLY OF DIRECT AND REFLECTED VISION, BUT OF REFRACTED VISION THEY KNEW VERY LITTLE.

MR. DOLLOND'S DISCOVERY OF ACHROMATIC GLASSES HAS BEEN OF GREAT IMPORTANCE IN THAT BRANCH OF OPTICS CALLED DIOPTRICS.

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DISAGGREGATION, the act or operation of separating an aggregate body into its component parts.

DISC, or DISK, the body and face of the sun, moon, or a planet, as it appears to us on the earth; or the body and face of the earth, as it would appear to a spectator in the moon.——In optics, the magnitude of a telescope glass, or the width of its aperture.——*Disc*, in botany, an aggregate of florets forming, as it were, a plane surface; or the middle plain part of a radiated compound flower, as in the marigold or daisy.

DISCHARGE, a word of various significations. Applied to *fire-arms*, it means an explosion; to *fluids*, a flowing, issuing, or throwing out, as water from a spring or spout. It also denotes a *dismissal* from office or service; a *release* from debt, obligation, or imprisonment; and the *performance* of any office, trust, or duty.

DISCHARGING ROD, an instrument used in electrical experiments, formed of metal wire with balls at the end, a joint in the middle, and a glass handle

DISCIPLE, one who learns anything from another: thus the followers of any teacher, philosopher, &c. are called disciples. In the more common acceptation, among Christians, the disciples denote those who were the immediate followers and attendants on Christ, of whom there were seventy or seventy-two; but the word is also correctly applied to all Christians, as they profess to learn and receive his doctrines and precepts. The words *disciple* and *apostle* are often synonymously used in the gospel history, but sometimes the apostles are distinguished from disciples as persons selected out of the number of disciples, to be the principal ministers of his religion.

DISCIPLINARIAN, one who is well versed in military and naval tactics and manœuvres: and who exacts a strict observance of them from those under his command.

DISCIPLINE, subjection to laws, rules, order, and regulations, either in a moral, ecclesiastical, or military sense. It also denotes that chastisement or external mortification which some religious devotees inflict on themselves.

DISCLAIMER, in law, a plea containing an express or implied denial.

DISCORD, in music, a union of sounds which is unharmonious, grating, and disagreeable to the ear; or an interval whose extremes do not coalesce. It is opposed to *concord* and *harmony*. The second, fourth, and seventh, with their octaves, and, in general, all intervals, except those few which precisely terminate the concords, are called discords. There is, notwithstanding, what is termed the *harmony of discords*, wherein the discords are made use of as the solid and substantial part of the harmony; for by a proper interposition of a discord, the succeeding concords receive an additional grace.

DISCOUNT, in commerce, an allowance made on a bill or any other debt not yet become due, in consideration of immediate payment: or any deduction from the customary price. The discounts at banking establishments are usually the amount of legal interest paid by the borrower, and deducted from the sum borrowed, at the commencement of the credit. Five per cent, or 100 shillings per cent per annum, is one shilling, or twelve pence, per pound, for twelve months; or one penny per pound per month. This is the usual method, but still it is inaccurate. The true discount for any given sum for any given time, is such a sum as will in that time amount to the interest of the sum to be discounted: the proper discount therefore to be received for the immediate advance of 100*l.* due twelve months hence is not 5*l.*, but 4*l.* 15*s.* 2$\frac{1}{2}$*d.*, for this sum will, at the end of the year, amount to 5*l.* which is what the 100*l.* would have produced.

DISCOVERY, in a general sense, that which is discovered, found out, or revealed; as, the discovery of America by Columbus; or the properties of the magnet were an important discovery.——*Discovery*, in law, the disclosing or revealing anything by a defendant in his answer to a bill filed against him in a court of equity.

DISCRETIVE, in logic, an epithet applied to a proposition expressing some distinction, opposition, or variety, by means of *but*, *though*, *yet*, &c.; as, men change their dresses, *but* not their inclinations.

DISCUMBENCY, the act of leaning at meals, according to the manner of the ancients.

DISCUS, in antiquity, a quoit made of stone, iron, or copper, five or six fingers broad, and more than a foot long, inclining to an oval figure, which they hurled in the manner of a bowl, to a vast distance, by the help of a leathern thong tied round the person's hand who threw it, and put through a hole in the middle.

DISCUSSIVE, in medicine, having the power to discuss or disperse tumours or coagulated matter.

DISCUTIENT, a medicine or application which disperses any coagulated fluid or tumour.

DISEASE, any state of a living body in which the natural functions of the organs are interrupted or disturbed, either by defective or preternatural action. A disease may affect the whole body, or a particular limb or part of the body; and such partial affection of the body is called a *local* or *topical* disease.

DISEMBOGUING, a term applied to rivers which discharge themselves into the sea.

DISFRANCHISE, to deprive of chartered rights and immunities; or to deprive of some franchise, as the right of voting in elections, &c.

DISINFECTION, in medicine, purification from infected matter.

DISINTEGRATION, in chemistry, the act of separating *integrant* parts of a substance, as distinguished from decomposition or the separation of *constituent* parts.



"A YOUNG DISCIPLE SHOULD BEHAVE SO WELL, AS TO GAIN THE AFFECTION AND THE BAR OF HIS INSTRUCTOR."—DR. WATTS.

THE DISINTEGRATION OF ROCKS, AND THE DECOMPOSITION OF VEGETABLES AND ANIMALS, PRESERVE THE EQUALITY AND NECESSARY VARIETY OF SOIL.

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DIVORCE, a separation, by law, of husband and wife; and is either a divorce *a vinculo matrimonii*, that is, a complete dissolution of the marriage bonds, whereby the parties become as entirely disconnected as those who have not been joined in wedlock, or a divorce *a mensâ et thoro* (from bed and board), whereby the parties are legally separated, but not unmarried. Divorces *a vinculo* are decreed by the ecclesiastical courts in England, for prior contract, too near an affinity, or consanguinity, and other causes, existing at the time of the marriage, but not for any subsequent cause. For any cause whatever, arising after the marriage, the ecclesiastical courts can only decree divorce *a mensâ et thoro*, which does not leave either of the parties to marry again.

DIURETICS, medicines which promote the urinary discharge.

DIURNAL ARCH, in astronomy, the arch or number of degrees that the sun, moon, or stars describe between their rising and setting.—*The diurnal motion of a planet*, is so many degrees and minutes as any planet moves in twenty-four hours.

DOCIMACY, or the DOCIMASTIC ART, the art of assaying metals, or separating them from foreign matters, and determining the nature and quantity of metallic substance contained in any ore or mineral. The metal is rarely found in a pure state; and when combined with non-metallic substances, its distinctive characters are so altered, that it often requires much skill and experience to recognize its nature, or to decide if it can be smelted with advantage. The assayer, therefore, triturates it to an impalpable powder, and then subjects it to the decomposing action of powerful chemical reagents. Sometimes with the aid of alkalies or salts appropriate to its nature, he employs the dry way by fire alone; at others the solvent power of acids is made to effect what fire alone is incapable of effecting: the usual preliminary test, however, is the blow-pipe.

DOCIMASIA, in Greek antiquity, a probation of the magistrates and persons employed in public business at Athens. It was performed publicly in the forum, where they were obliged to give account of themselves and their past life before certain judges.

DOCKS. By the word dock was formerly understood a slip or excavation made for the purpose of building or repairing a vessel. When furnished with flood-gates to prevent the influx of the tide, if required, it was called a *dry dock;* and when, having no flood-gates, the vessel could only be cleaned or repaired during the period in which the tide left her accessible, it was called a *wet-dock*. Both these docks are still used; but the name of *graving* or *building dock* is now more generally given to what we have termed *dry dock*, which latter term is applied to those docks or basins left dry by the tide; while the appellation *slip* is confined to the narrow inlet for building or repairing, unprotected by gates. Most seaport towns are provided with graving docks for the repairing of ships; but it is only in the British islands that the system has been carried to any extent of forming large basins or floating docks, furnished with flood-gates for the reception of shipping to load and unload, wherein the vessel remains safe at the quay side. That these floating docks were a great desideratum, and have contributed much towards our commercial prosperity, no one can doubt who considers the inconvenience, danger, and delay caused by loading and unloading vessels in a tide-river or in a harbour not entirely landlocked. Mr. McCulloch observes, that "notwithstanding the obvious utility of wet docks, and the vast trade of the metropolis, there was no establishment of this sort on the Thames till nearly a century after a wet dock had been constructed at Liverpool. The inconvenience arising from the crowded state of the river, at the periods when fleets of merchantmen were accustomed to arrive, the insufficient accommodation afforded by the legal quays and sufferance wharfs, the necessity under which many ships were placed of unloading in the river into lighters, and the insecurity and loss of property thence arising, had been long felt as almost intolerable grievances; but so powerful was the opposition to any change, made by the private wharfingers and others interested in the support of the existing order of things, that it was not till 1793 that a plan was projected for making wet docks for the port of London; and six years more elapsed before the act for the construction of the West India Docks was passed." To give the reader an idea of the extent of these docks, and their commercial importance, it will be sufficient to state, that the docks, with their basins, and the locks which connect them with the river, present an area of 66 acres of ground, excavated for the reception and moorage of vessels. The total superficies, including that of the quays and warehouses, is 140 acres. It can admit at the same time 204 vessels in the import, and 195 in the export dock, forming a total of 120,000 tons. Upon the quays, under the sheds, and in the warehouses, there have been deposited, at the same time, 148,563 casks of sugar, 433,648 bags of coffee, 35,158 pipes of rum and Madeira wine, 14,021 logs of mahogany, 21,350 tons of logwood, and a variety of other articles. There are also the East India Docks, the London Docks, and St. Katherine's Docks, each of which, though inferior in size to the West India Docks, are magnificent works. Forty years ago nearly the whole of the vessels that entered the port of London were obliged to remain moored in the open stream of the Thames!

DOCKET, in law, signifies a brief in writing. The rolls of judgment, when brought into the court of common-pleas, are entered on the docket of that term: and attorneys keep docket-books, wherein they enter judgments.



WHEN A MINE YIELDS NATIVE METAL, OR ITS OXIDE, NO FURTHER PROCESS BEYOND TEST OF PICKING AND FUSING IS NECESSARY.

THE TWENTY-TWO DOCKS OF LIVERPOOL COVER 111 ACRES, AND THEY QUAY SPACES AROUND THEM ARE EIGHT MILES; THEY COST ABOVE TWO MILLIONS.

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ployed, in the form of a powder, for the same purposes as ipecacuanha.

DOG-DAYS, the period between the 24th of July and the 24th of August; so called because the dog-star (Sirius) during this period rises with the sun; and the heat, which is usually most oppressive at this season, was formerly ascribed to the conjunction of this star with the solar luminary.

DOG-FISH, in ichthyology, the popular name of several of the genus *Squalus*, or shark. In their general character they differ but little from the other sub-genera of the great shark family, so well known for their ferocious habits. Although dog-fishes are seldom, if ever, injurious to man, they commit great ravages in the fisheries by their voracity. The flesh of all the species is hard, dry, and unpalatable, requiring to be well soaked before it is eaten; but a considerable quantity of oil is obtained from the liver.

DOG'GEREL, an epithet given to a kind of loose, irregular, burlesque poetry, like that of Hudibras.

DOG'WOOD, in botany, *Cornus Florida*, a small tree growing in America, the wood of which is white, hard, and of a fine texture; much used by cabinet-makers for inlaying, &c., and considered little inferior to box. Its bark possesses properties very similar to the Peruvian bark, and is often used as a substitute for it.

DOGE, formerly the title of the chief magistrate in the republics of Venice and Genoa. The dignity was elective in both places: at Venice it continued for life; at Genoa, only for two years. His power became, by degrees, very limited.

DOG'GER, the name of a two-masted Dutch fishing vessel. In some of our old statutes, we meet with *dogger-men*, denoting the fishermen whose vessels were of this description.

DOG'MA, a principle, maxim, tenet, or settled opinion, particularly with regard to matters of faith and philosophy; as, the *dogmas* of the church; the *dogmas* of Aristotle.

DOG'MATISTS, a sect of ancient physicians, of which Hippocrates was the first. They are also called *logici*, or logicians, from their using the rules of logic on professional subjects. They laid down definitions and divisions, reduc ng diseases to certain genera, and those genera to species, and furnishing remedies for them all; supposing principles, drawing conclusions, and applying those principles and conclusions to the particular diseases under consideration.

DOG'-STAR, or SIRIUS, a star of the greatest magnitude in the constellation *Canis*.

DOIT, the ancient Scottish penny-piece, twelve of which were equal to a penny sterling. Two of them were equal to the *bodle*, six to the *bawbee*, and eight to the *ackeson*.

DOLE, in our ancient customs, signified a part or portion of a meadow, where several persons had shares. It now means a distribution or dealing of alms, or a liberal gift made to the people or to some charitable institution.

DOL'MAN, a kind of long cassock, worn by the Turks, hanging down to the feet, with narrow sleeves buttoned at the wrist.

DO'LIUM, the name of a genus of shells, called by some *conchæglobosa*.—— The *dolium* is a simple shell, without any hinge, formed of one continuous piece, which makes a body of a figure approaching to round, distended, and, as it were, inflated. The animal inhabiting it is a *limax*.

DOL'LAR, a silver coin of Spain and of the United States, of the value of 4s. 6d. sterling, or 100 cents. In Germany, the name *dollar* is given to several coins of different values.

DOL'OMITE, in mineralogy, a variety of magnesian carbonate of lime, so called from the French geologist Dolomieu. It occurs under considerably diversified aspects, constituting beds of very great extent, and abounding in the Appenines, the Tyrol, Switzerland, and Tuscany. It is of various shades of white; and both in Europe and America it is frequently employed as marble.

DOL'PHIN, (*delphinus*) in ichthyology, a genus of cetaceous fish. But that to which seamen give this name is the *Coryphæna hippuris* of Linnæus. The colour is a silvery white, with yellowish spots. It has a roundish snout and tapering body, with a fin running along the back from the head to the tail. Few fish are more agile, or swim with greater velocity.

DO'MESDAY, or DOOMS'DAY-BOOK, a book or record made by order of William the Conqueror, which now remains in the exchequer, and consists of two volumes, a large folio and a quarto; the former contains a survey of all the lands in most of the counties in England, and the latter comprehends some counties that were not then surveyed. The "Book of Domesday" was begun by five justices, assigned for that purpose in each county, in the year 1081, and finished in 1086. It was of such authority, that the Conquèror himself submitted, in some cases wherein he was concerned, to be determined by it. Camden calls it the Tax-book of king William; and it was farther called *Magna Rolla*. There is likewise a third domesday book, made by command of the Conqueror; and also a fourth, being an abridgment of the other books.

DOME, in architecture, a spherical roof, or cupola, raised over the middle of a building. Some of the greatest architects, both in this country and Italy, have given their particular attention to this branch of building.——The dome of St. Paul's, by Sir Christopher Wren, is considered as a master piece.

DOMIN'ICAL LETTER, in chronology, is that letter of the alphabet which points out in the calendar the Sundays throughout

THE REASON ASSIGNED FOR THE SURVEY TAKEN BY WILLIAM THE CONQUEROR, WAS THAT EVERY MAN SHOULD BE SATISFIED WITH HIS OWN RIGHT.

DOMESDAY-BOOK IS KEPT IN THE CHAPTER-HOUSE AT WESTMINSTER, WHERE IT MAY BE CONSULTED ON PAYING A FEE OF 6s. 8d. TO THE PROPER OFFICERS.



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and rough, yet there was something venerable and dignified in its antique style; for which reason it was often made use of in solemn odes, &c.—The *Doric order* of architecture is the second of the five orders, being that between the Tuscan and Ionic. It is distinguished for simplicity and strength: and is used in the gates of cities and citadels, on the outside of churches, and other situations where embellishment is unnecessary or inappropriate.—The *Doric* mode, in music, was the first of the authentic modes of the ancients; and grave rather than gay.

DOR'MER, or DOR'MENT, in architecture, a window made in the roof of a building.

DOR'MANT, an epithet expressive of a state of inaction or sleep. Hence we speak of *dormant* animals, or such as remain several months in the year apparently lifeless, or, at least, in utter inactivity. The period of long sleep generally begins when the food of the animal grows scarce, and inactivity spreads over the vegetable kingdom. Instinct at this time impels the animals to seek a safe place for their period of rest. The bat hides itself in dark caves, or in walls of decayed buildings; the hedgehog envelopes himself in leaves, and generally conceals himself in fern brakes; and the marmot buries himself in the ground. In this period we observe in the animals, first a decrease of animal heat; and secondly, that they breathe much slower and more uninterruptedly than at other times. The digestion is also much diminished; the stomach and intestines are usually empty; and even if the animals are awakened, they do not manifest symptoms of appetite, except in heated rooms. The causes of the dormant state of animals have generally been sought in a peculiar construction of the organs; but the immediate cause producing this torpidity, is mostly, if not entirely, the cold. Frogs, serpents, and lizards, kept in artificial cold, may remain for years in this state; hence they have been sometimes found enclosed in stones, in which they have been perhaps for centuries. The other lower animals, as snails insects, &c., are also subject to a similar torpidity. A state of partial torpor takes place in the case of the common bear, the badger, and the racoon. The bear begins to be drowsy in November, when he is particularly fat, and retires into his den, which he has lined with moss, and where he but rarely awakes in winter.—*Dormant*, in heraldry, is used for the posture of a lion, or any other beast lying along in a sleeping attitude, with the head on the fore paws, by which it is distinguished from the *couchant*, where, though the beast be lying, yet he holds up his head.—*Dormant* (or *sleeping) partner*, one who takes no share in the active business of a partnership, but is entitled to a share of the profits, and subject to a share of the losses. To be of any use such a partner ought to have sufficient capital to assist the concern in an emergency, or when circumstances seem to warrant it.

DOR'MOUSE, in zoology, a genus of mammiferous quadrupeds, of the order *Glires*. During the rigour of winter they retire to their bed of moss or dry leaves, made in a hollow tree or under shrubs, and rolling themselves up, fall into a torpid or lethargic state; which lasts, with little interruption, throughout that cheerless season. Sometimes they experience a short revival, in a warm, sunny day, when they take a little food, and then relapse into their former condition.

DOR'NOCK, a kind of figured linen, of stout fabric, manufactured for coarse table cloths. It derives its name from a town in Scotland, where it was first made.

DOR'SAL, an epithet for what belongs or relates to the back, as the dorsal fins of fishes.

DORSIF'EROUS, in botany, a term for plants of the capillary kind, without stalks, and which bear their seeds on the back of their leaves.

DORYPH'ORI, in antiquity, an appellation given to the life-guard men of the Roman emperors.

DOSE, the quantity of any medicine prescribed by the physician to be taken by the patient at one time.—*Dose*, in chemistry, the quantity of any substance which is added to any solution, in order to produce any chemical effect.

DOS'SIL, in surgery, a pledget or piece of lint made into a cylindrical form.

DOTAGE, the childishness and imbecility of old age.

DOTTEREL, the name of different species of fowls, of the genus *Charadrius*, and the grallic order: as the Alexandrine dotterel, the ringed dotterel, &c.

DOUBLE ENTENTE (*French*), a term applied to a word of two different meanings.—*Double-entendre*, any phrase which has a covert as well as an obvious meaning.

DOUB'LET, among lapidaries, a counterfeit stone composed of two pieces of crystal, with a colour between them, so that they have the same appearance as if the whole substance were coloured.

DOUB'LING *a cape*, is to sail round or pass beyond it, so that the point of land ahall separate the ship from her former situation, or lie between her and any distant observer.

DOUBLOON', a Spanish coin of the value of two pistoles, or 3*l.* 6*s.* sterling.

DOUBT, uncertainty of mind; or the act of withholding our assent from any proposition, on suspicion that we are not thoroughly apprised of the merits or from not being able peremptorily to decide between the reasons for and against it.

DOUCEUR', a present or bribe for the acquirement of any desired object.

DOUCINE, (*French*), in architecture, a moulding concave above and convex below, serving as a cymatium to a delicate cornice.

DOVE, in ornithology (a wild pigeon, a species of *Columba*), of which there are three sorts, namely the *ring-dove*, the largest of the pigeon tribe, so wild that it cannot be domesticated; the *stock-dove*, that is mi-

MANY BIRDS, WHICH WERE SUPPOSED TO RETREAT INTO HOLES AND LIE DORMANT DURING WINTER, ARE NOW KNOWN TO MIGRATE.

MANY VEGETABLES DURING THE NIGHT DO NOT SEEM TO RESPIRE, BUT TO SLEEP LIKE THE DORMANT ANIMALS AND INSECTS IN WINTER.



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THE FIRST PATENT FOR A THEATRE WAS GRANTED TO KILLIGREW FOR DRURY-LANE, THE NEXT TO DAVENANT FOR LINCOLN'S INN FIELDS.

answer the end designed, they were hardly ever used in infantry service, and now form a useful kind of cavalry, mounted on horses too heavy for the hussars, and too light for the cuirassiers.

DRAINING, in agriculture, a method of improving the soil by withdrawing the water from it. Where the land is composed of such soils as are liable to admit and retain the excesses of moisture, they are exposed to much injury and inconvenience from the retention and stagnation of water: they consequently require artificial means to drain and render them capable of affording good crops. To effect this there are various modes, adapted to the peculiar nature of the land, its situation, &c., the true knowledge of which forms an important feature in the business of a practical agriculturist, and will well repay his care. By a judicious system of *under-draining*, large tracts of land, apparently worthless, have been brought into a state of high cultivation; nay, we have ourselves been informed, by a large landed proprietor, whose estates are situated on the northern borders of Gloucestershire, and who has paid the most sedulous attention to this practice, that the time is not very remote when some of his own land, now worth forty shillings per acre, was let for five!

DRAM'A, the name of all compositions adapted to recitation and action on the stage, whether tragedy, comedy, opera, or farce; in which are displayed, for instruction and amusement, all the passions, feelings, errors, and virtues, of the human race in real life. The elements of the dramatic art are found among all nations; and every people which has made progress in civilization, has, at the same time, shewn some taste for it. The drama, says Vossius, owes its rise to the days of festivity; for in ancient times, it was usual for men, when they gathered in the fruits of the earth, to meet together that they might sacrifice to the deity, and unbend their minds from the fatigues of the harvest. Hence arose two sorts of poetry, the one grave, in praise of the gods, the other jocose and full of lampoons directed against each other. From the former arose tragedy; from the latter, satire, comedy, and buffoonery. The Europeans are indebted for the drama, as for so many other productions of civilization, to the Greeks. From them it passed to the Romans, whose acquisitions in civilization were in part preserved, and in part revived by the Italians; but the dramatic genius who has surpassed all ancient and modern writers, in universality of conception and knowledge of human nature, appeared in the person of our own unrivalled Shakspeare. In the beginning of the middle ages, when everything noble was buried under the deluge of barbarism, the dramatic art was lost, or existed only among the lower classes of the people, in plays improvisated at certain festivals; for instance, at the carnival. These were attacked as heathenish, immoral, and indecent exhibitions; but the favour which they enjoyed among the people, and the spirit of the times, induced the clergy to encourage theatrical exhibitions of subjects from sacred history. It is impossible to ascertain the exact period when theatrical amusements were first introduced into England; but they are mentioned as having existed very early by William Fitz-Stephen, a monk of Canterbury, in his *Descriptio nobilissimæ civitatis Londoniæ*, written soon after the year 1170. "London, instead of common interludes belonging to the theatre, has plays of a more holy subject; representations of those miracles which the holy confessors wrought, or of the sufferings wherein the glorious constancy of the martyrs did appear." These representations being mentioned as neither new nor uncommon, we may reasonably conclude them to be of a date still more ancient; and they continued a long time after to be the only subjects for the drama. These *Mysteries*, as they were at that time denominated, were followed by a species of the drama, styled *Moralities*, in which the senses, passions, affections, virtues, and vices, were personified, and constituted the characters: these being of a moral turn, and contrived to entertain as well as instruct, soon exhibited some dawnings of poetry, with occasional attempts at wit and humour, which naturally introduced *comedy*: the earliest English piece, meriting that title, is *Gammer Gurton's Needle*, written by Dr. Still; performed at Christ's college, Cambridge, and printed in 1551.——The moral influence of dramatic representations on the manners of a people is far greater than may generally be supposed; and in our opinion there is no class of persons more deserving of public esteem than those censors of histrionic performances, who sit in judgment on them, and conscientiously award their praise or censure. Both dramatists and managers who endeavour to exalt the character of the stage, cannot be too highly commended or rewarded; while such as ignobly study to gratify a depraved taste, are fit objects for the severest reprehension.

DRAMATIS PERSONÆ, the characters represented in a drama.

DRASTICS, medicines which operate speedily and effectually.

DRAPERY, in sculpture and painting, the representation of the clothing of human figures; also hangings, tapestry, curtains, and most other things that are not flesh or landscape.

DRAUGHT, in architecture, the delineation of any intended building, &c.——In navigation, the depth of water necessary to float a vessel; or the depth to which a ship sinks when laden; as, a ship of ten feet draught.——*Draughts*, an amusing game played on a chequered board, like the chess-board.——*Draught-hooks*, the iron hooks fixed on the cheeks of a cannon-carriage, used in drawing the gun backwards and forwards.——*Draught-horse*, a horse used in drawing carts, &c., as distinguished from a saddle-horse.

THE GREATEST STAIN ON OUR DRAMA IS THE PRACTICE OF ADMITTING WOMEN OF LOOSE CHARACTER—AS DISGUSTING AS IT IS IMMORAL.



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THE DRUIDS HAD A COMMON SUPERIOR, WHO WAS ELECTED FROM THEIR OWN NUMBER, AND WHO ENJOYED HIS DIGNITY FOR LIFE.

class 5 *Pentandria*, order 5 *Pentagynia*, they are herbaceous and of small size, and very singular in their structure. The leaves are furnished with glandulous hairs on the upper surface, and fringed round the edge: these hairs have each a small globule of pellucid liquor like dew, continuing even in the hottest part of the day, and in the fullest exposure to the sun. Hence the English name "the sun-dew." The *Drosera acaulis* has a sessile flower in the bosom of the root leaves. These plants have the property of entrapping small insects within their folded leaves.

DROSOM'ETER, an instrument for ascertaining the quantity of dew which falls. It consists of a balance, one end of which is furnished with a plate to receive the dew, the other containing a weight protected from it.

DROVE, a number of animals collected together, and driven in one body. When merely collected, we say a herd of cattle, or a flock of sheep; but a *drove* is a herd or flock *driven*. He who drives them is called a *drover*.

DROWN'ING, the extinction of the vital powers, caused by immersion in a liquid. If a man, unable to swim, falls into the water, he instinctively makes every exertion to escape from it; for a time he struggles, but at last becomes exhausted, and sinks. The methods of treatment recommended by the London Humane Society for the recovery of persons in a state of suspended animation ought to be kept in every house, and known to every individual; and in all cases, medical assistance should be immediately sent for. In the mean time, avoid all rough usage, and attend to the following *cautions:* never hold the body up by the feet; nor roll the body on casks; nor rub the body with salts or spirits; nor inject tobacco-smoke or infusion of tobacco; but convey the body carefully, with the head and shoulders supported in a raised position, to the nearest house: strip the body, and rub it dry; then wrap it in hot blankets, and place it in a warm bed, in a warm chamber; put bladders or bottles of hot water, or heated bricks, to the pit of the stomach and the soles of the feet, and foment the body with hot flannels; but, if possible, immerse the body in a warm bath, as hot as the hand can bear without pain, as this is preferable to the other means of restoring warmth. Do not, however, suspend the use of the other means at the same time. These observations are recommended in the absence of a medical practitioner. He, perhaps, will see it necessary to employ electricity, injections, &c. The treatment recommended by the society is to be *persevered* in three or four hours; for it is a very erroneous opinion, that persons are irrecoverable because life does not soon make its appearance.

DRUG, a general name for substances used in medicine, sold by the druggist, and compounded by apothecaries, &c. It is also applied to dyeing materials.——In commerce, any article lying on hand, or become unsaleable, is called a *drug*.——A *mortal* or *deadly drug*, is poison.

DRUG'GET, a coarse woollen fabric, used for covering carpets, and sometimes as an article of clothing by females of the poorer classes.

DRU'IDS, the priests or ministers of the ancient Britons and Gauls, resembling, in many respects, the bramins of India. The Druids were chosen out of the best families; and were held, both by the honours of their birth and their office, in the greatest veneration. They are said to have understood astrology, geometry, natural history, politics, and geography; they had the administration of all sacred things; were the interpreters of religion, and the judges of all affairs; and, according to Cæsar, they believed in the immortality of the soul, and its transmigration through different bodies.

DRUM, a military musical instrument in form of a cylinder, hollow within, and covered at the ends with vellum, which is stretched or slackened at pleasure by the means of small cords and sliding knots. It is beat upon with sticks. Some drums are made of brass, but they are commonly of wood. There are several beats of the drum, as the *chamade*, *reveille*, *retreat*, &c.——*Drum of the ear*, the hollow part of the ear, behind the membrane of the *tympenum;* which latter is a tense membrane, closing the external passage of the ear, and receiving the vibrations of the air.

DRUN'KENNESS, intoxication. Physically considered, it consists of a preternatural compression of the brain, and a discomposure of its fibres, occasioned by the fumes or spirituous parts of liquors; so that the drunkard's reason is disordered, and he reels or staggers in walking. Drunkenness appears in different shapes, in different constitutions: some it makes gay, some sullen, and some furious. Hobbes makes voluntary drunkenness a breach of the law of nature, which directs us to preserve the use of our reason. Paley calls it "a social festive vice;" and says, "the drinker collects his circle; the circle naturally spreads; of those who are drawn within it, many become the corrupters and centres of sets and circles of their own; every one countenancing, and perhaps emulating the rest, till a whole neighbourhood be infected from the contagion of a single example." Drunkenness is punishable by fine and imprisonment, and in law is no excuse for any crime committed during the paroxysm.

DRUPE, in botany, a pulpy fruit, containing a nut or stone, with a kernel like the plum, cherry, apricot, &c. Hence the epithet *drupaceous*, for fruit consisting of drupes.

DRUSE, in mining, a cavity in a rock, having its interior surface studded with crystals, or filled with water.

DRY'ADS, in the heathen theology, a sort of deities or nymphs, which the ancients thought inhabited groves and woods. They differed from the *Hamadryads*, these latter being attached to some particular tree with

DURING THE ROMAN DOMINATION IN BRITAIN THEY PERSECUTED THE DRUIDS, OWING TO THEIR GREAT INFLUENCE OVER THE PEOPLE.



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tory, or jurisdiction over the place from whence the title is taken.

DULOC'RACY, a government in which slaves and the lowest order of the people have the power.

DUMO'SÆ, the 43d Linnæan natural order of plants, containing shrubs and bushes, as the elder, &c.

DUL'CIFIED SPIRITS, a term formerly applied to the different ethers: as, the *dulcified spirits* of nitre and vitriol.

DUL'CIMER, a musical instrument played by striking brass wires with little sticks.

DUMB. The most general, if not the sole cause of dumbness, is the want of the sense of hearing; and nothing is more fallacious than the idea, that the want of speech is owing to the want of mental capacity. The necessity of communication, and the want of words, oblige him who is dumb to observe and imitate the actions and expressions which accompany various states of mind and of feeling, to indicate objects by their appearance and use, and to describe the actions of persons by direct imitation, or pantomimic expression. Hence what has been called the natural sign language has been adopted by instructors of the deaf and dumb, in order to express all the ideas we convey by articulate sounds. This language, in its elements, is to be found among all nations, and has ever been the medium of communication between voyagers and the natives of newly discovered countries. The more lively nations of Europe, belonging to the Celtic race, the French, Italians, &c. make great use of it, in connexion with words, and sometimes even without them. The more phlegmatic people of the Teutonic race, in England and Germany, are so little disposed to it, that they regard it as a species of affectation or buffoonery in their southern neighbours. The method of instructing the deaf and dumb, which has been most successfully employed in this country, consists in teaching the pupil the relation between the names of objects and the objects themselves, the analysis of words into letters of the alphabet, and the particular gesture which he is to attach to each word as its distinctive sign—showing to him also the meaning of collective words, as distinguished from those denoting individual objects, or parts of objects. It is out of our power to enter into details in this place; but those readers who seek further information will find it in a book published in 1809, on the Instruction of the Deaf and Dumb, by Dr. Watson, who had the management of the asylum for this purpose, which was established in London, in 1792. [See also the article DEAFNESS.]

DUN, of a colour partaking of a dull brown and black.——*To dun*, to press for the payment of money by repeatedly calling for it. Hence an importunate creditor is called a *dun*.

DUN'NAGE, in commercial navigation, loose wood laid in the bottom and against the sides of the ship's hold, in order to prevent the cargo from being injured in the event of her becoming leaky.

DUN'NING, a particular method of curing cod-fish, practised off the coast of New Hampshire, in North America. It is thus described:—"the cod are taken in deep water, split, and stack-salted; then laid in a pile for two or three months, in a dark store, covered for the greatest part of the time with salt hay or eel-grass, and pressed with some weight. In April or May, they are opened and piled again as close as possible in the same dark store, till July or August, when they are fit for use."

DUODE'CIMALS, in arithmetic, are numbers proceeding in a proportion of twelves; in the same way as decimals proceed in a proportion of tens. This rule is used by workmen and artificers in computing the contents of their work. Dimensions are usually taken in feet, inches, and parts. —— *Duodenary Arithmetic*, is that in which the local value of the figures increases in a twelvefold proportion.

DUODE'CIMO, having or consisting of twelve leaves to a sheet; or a book in which a sheet is folded into twelve leaves.

DUODE'NUM, in anatomy, the first of the small intestines.

DU'PION, a double cocoon, formed by two or more silk-worms.

DU'PLE, among mathematicians, an epithet applied to a ratio, where the antecedent term is double the consequent, or where the exponent of the ratio is 2: thus the ratio of 8 to 4 is a duple ratio.——*Subduple ratio* is just the reverse of the former, or as 1 to 2. Such is 4 to 8, or 6 to 12.

DU'PLICATE, a copy or transcript.—— *Duplicate proportion* or *ratio*, is the proportion of the square of one number to the square of another.

DU'PLICATURE, in anatomy, the fold of a membrane or vessel.

DUPLI'CITY, the act of dissembling one's real opinions for the purpose of concealing them and misleading persons in the conversation and intercourse of life.

DU'RA MATER, in anatomy, the membrane which lies between the bones of the skull and the parts of the brain, and also dividing it into two parts.

DURESS', in law, is restraint or compulsion; as, where a person is wrongfully imprisoned, or restrained of his liberty, contrary to law; or is threatened to be killed, wounded, or beaten, till he executes a bond, or other writing. Any bond, deed, or other obligation, obtained by duress, will be void in law; and in an action brought on the execution of any such deed, the party may plead that it was brought by duress.

DURAN'TE, in law, During; as, *durante bene placito*, during pleasure; *durante minore etate*, during minority; *durante vitâ*, during life.

DUR'RA, a sort of millet cultivated in North Africa.

DUSK, a middle degree between light and darkness; as twilight, or the *dusk* of the evening. Hence the words *dusky*, *duskiness*, &c.

THE FIRST WORK EVER PRINTED FOR THE INSTRUCTION OF THE DEAF AND DUMB WAS WRITTEN BY JOHN BONET, A SPANIARD, IN 1620.

THE CELEBRATED DWARF, JEFFRY HUDSON, WAS 3 FEET 9 INCHES IN HEIGHT, BUT THE POLISH COUNT BOROWLASKI WAS ONLY 2 FEET 4 INCHES.

indulgence, which have been exceedingly extended; and indirectly, by the multiplication of intellectual and moral agitations, from the extension of the commercial and financial operations of society, the greater activity and employment of the intellectual faculties, and the augmentation of political, social, and individual reverses.

DYS'PHONY, in medicine, a difficulty of speaking, occasioned by an ill disposition of the organs of speech.

DYSPNŒ'A, in medicine, a difficulty of breathing.

DYS'URY, in medicine, difficulty in discharging the urine, attended with pain and a sensation of heat.

# E.

E, the fifth letter in the alphabet, and the second vowel, has different pronunciations in most languages. The French have their *e* open, *e* masculine, and *e* feminine or mute. In English there are three kinds of *e*; open, as in *wear, bear*; long, as in *here, mere, me*; and short, as in *wet, kept, &c.* As a final letter it is generally quiescent: but it serves to lengthen the sound of the preceding vowel, as in *mane, cane, thine*, which without the final *e* would be pronounced *man, can, thin*. In many other words the final *e* is silent, as in *examine, definite*, &c. As a numeral, E stands for 250. In sea-charts, E stands for East: E by N. and E by S. East by North, and East by South.

E'AGLE, a rapacious fowl, of the genus *Falco*, is called, on account of his great strength and the rapidity and elevation of his flight, the king of birds. There are several species; as the sea-eagle, or ossifrage, which feeds on fish; the golden eagle, three feet long, with wings extending above seven feet, which devours fawns, lambs, kids, &c.; the cinereous eagle, common in the mountains of Europe; the crying or plaintive eagle, of Siberia and Asia; and also the bald or white-headed eagle, which preys on flesh and fish. The talons and bills of all the species are strong and terrible; their sight is keen and distant and they live to a great age.——*Eagle*, in heraldry, one of the most noble bearings in armoury, and, according to the learned in that science, ought to be given to none but such as greatly excel in courage and magnanimity.——Among the ancients, the eagle was held sacred to Jupiter, and placed on his sceptre, as the carrier of the lightning, and thereby expressive of superior dominion. In this sense he is used as the emblem and symbol of nations, princes, and armies. As the standard of an army, the eagle was first used by the Persians. Among the Romans, it was either of gold or silver, borne singly on the point of a staff, till the time of Constantine, when the empire being divided into the eastern and western, the eagle was afterwards represented with two heads. During the sway of Napoleon, the French took for their standard an eagle with his wings folded; and an eagle standing with outspread wings, is the military emblem of the United States of America.——The eagle is also the badge of several orders, as the black eagle and the red eagle of Prussia, the white eagle of Poland, &c.

E'AGLET, a diminutive of eagle, properly signifying a young eagle.——In heraldry, when there are several eagles on the same escutcheon, they are termed eaglets.

E'AGLE-STONE, in mineralogy, an argillaceous oxyde of iron, varying in size from that of a walnut to a man's head; of a spherical or oval shape; having a rough surface, and being essentially composed of concentric layers. In the centre is generally a kernel or nucleus, sometimes moveable, and always differing from the exterior in colour and density. The ancients gave them the name of eagle-stones, from an idea that the eagle carried them to her nest to facilitate the laying of her eggs.

EAR, the organ of hearing; a cartilaginous substance attached to the head for conveying undulations of air to the nerves and brain. The external cartilage collects the sound into the *concha*, at the bottom of which is the *tympanum*, like the skin of a drum, and beneath the tympanum is a cavity, terminated by a tube called the *Eustachian tube*; and further on are several winding passages filled with a watery fluid, in which the nerves are situated.——*Ear*, in music, denotes that internal sense by which we perceive and judge of harmony, and distinguish musical sounds.——*Ear*, among gardeners, a name given to the leaves that first appear from the seed which differ considerably from other leaves.

EARING, in seamen's language, a small rope employed to fasten the upper corner of a sail to its yard.

EARL, a title of British nobility, between a marquis and a viscount; now the third degree of rank. William the Conqueror first made this title hereditary, giving it in fee to his nobles, and allotting them for the support of their state the third penny out of the sheriff's court, issuing out of all pleas of the shire whence they had their title. At present the title is accompanied by no territory, private or judicial rights, but confers nobility, and an hereditary seat in the House of Lords. In official instruments, they are called by the king, "trusty and well-beloved cousins," an ap-



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WHEN EAGLES FLY HIGHEST, THEY SPRING PERPENDICULARLY UPWARDS, WITH THEIR EYES STEADILY FIXED UPON THE SUN.

THE EAGLE SOARS TO A GREATER HEIGHT THAN ANY OTHER BIRD, FROM WHICH CIRCUMSTANCE THE ANCIENTS CALLED IT THE MESSENGER OF JOVE.

Newton's discovery of universal gravity, and of the nature of the celestial motions, established the theory of the earth's motion; and, in modern times, no man of intelligence any longer doubts it.

EARTH'ENWARE, or POTTERY. Under the head "CHINA-WARE" will be found such observations as would be perfectly applicable here: we therefore beg to refer to it. We shall, however, devote a few sentences to the state of its manufacture in this country, particularly as regards its rise and present importance in the district called the Potteries in Staffordshire. The Potteries comprise a number of villages, with a population amounting to above 60,000, by far the greater proportion of which is engaged in the manufacture; and it is believed that when Mr. Wedgwood began his discoveries and brought forward his improvements there in 1760, the population was scarcely one third of that number. The best clay from which the Staffordshire ware is made, comes from Dorsetshire; and a second quality from Devonshire. It is composed of about 24 parts of alumine, and 76 of silica, with some other ingredients in very small proportions. This clay is very refractory in high heats, a property which, joined to its whiteness when burned, renders it peculiarly valuable for pottery. It is also the basis of all the yellow biscuit-ware called "cream colour," and in general of what is called the "printing body;" as also for the semi-vitrified porcelain of Wedgwood's invention, and of the tender porcelain. It is estimated that the value of the different sorts of earthenware produced at the Potteries may amount to 1,500,000*l.* a-year; and that the earthenware produced at Worcester, Derby, and other parts of the country, may amount to about 750,000*l.*; making the whole value of the manufacture 2,250,000*l.* a-year. It has with great truth been said, that there is scarcely any manufacture which is so interesting to contemplate in its gradual improvement and extension as that of earthenware, presenting, as it does, so beautiful a union of science and art, in furnishing us with the comforts and ornaments of civilized life. Formed from substances originally of no value, the fabrication has induced labour of such various classes, and created skill of such various degrees, that nearly the whole value of the annual produce may be considered an addition made to the mass of national wealth.

EARTH'QUAKE, a concussion or vibration of the ground, usually preceded by a rattling sound in the air, or by a subterraneous rumbling noise; and sometimes accompanied by rents, and by shaking of the surface, so as to swallow up towns and tracts of country. At one time it is hardly perceptible; at another, it is so violent, that it not only demolishes the works of art, but changes the appearance of the ground itself. Sometimes the surface of the ground remains unbroken; sometimes it bursts open into clefts and chasms; and then occasionally appears the phenomenon of the eruption of gases, and also of flames, with the ejection of water, mud, and stones, as in volcanic eruptions. Volcanoes are, indeed, only so many spiracles serving for the discharge of this subterranean fire, when it is thus assembled; and where there happens to be such a structure and conformation of the interior parts of the earth, that the fire may pass freely and without impediment from the caverns therein, it gathers into these spiracles, and then readily and easily gets out from time to time without shaking or disturbing the earth: but where a communication is wanting, or the passages are not sufficiently large and open, so that it cannot come at these spiracles, without first forcing and removing all obstacles, it heaves up and shakes the earth, till it makes its way to the mouth of the volcano; where it rushes forth, sometimes in flames of vast volume and velocity. Earthquakes are sometimes confined to a narrow space, which is properly the effect of the re-action of the fire; and they shake the earth just as the explosion of a powder-magazine causes a sensible concussion at the distance of several leagues. These observations furnish grounds for the conclusion, that earthquakes cannot proceed from external causes, but arise from certain powers operating within the circumference or crust of the earth. The subterraneas, thunder-like noises; the shaking, raising, and bursting asunder of the earth; the emission of fire and flames, and the ejection of mineral substances; all occur, occasionally, in earthquakes as well as in volcanic eruptions, even when at a distance from active volcanoes. All the observations, in fact, that have been made, tend to prove, that earthquakes and volcanic eruptions are effects of the same chemical process (so to speak), which must have its seat at a great depth beneath the earth's surface.

EARTH'ING, in agriculture and gardening, signifies the covering of shrubs and plants, as vines, celery, &c. with earth.

EARTH'-NUT, a kind of plant, the pods or nuts of which ripen under ground. The nuts yield a quantity of oil.

EARTH'-WORM, a worm bred under ground, being the common species of the worm.

EARTHS, in a popular sense, may be considered those solid bodies composing the mineral strata, which are incombustible, colourless, not convertible into metals by all the ordinary methods of reduction, or, when reduced by scientific experiments, possessing but an evanescent metallic existence. But, to describe *earths* according to the rules of chemical science, we should say, that they are tasteless, inodorous, unflammable substances, occurring in intimate union with each other, and with various acids and metallic oxydes. Under these circumstances, they constitute by far the greatest part of the strata, gravel, and soil, forming the mountains, plains, and valleys of our globe. Their number is ten, and their names are *silex, alumina, magne-*

EARTHQUAKES ARE GENERALLY MOST SEVERE IN NON-VOLCANIC COUNTRIES, THOUGH THEY MOST FREQUENTLY OCCUR WHERE VOLCANOES EXIST.

THE ROCKS IN WHICH METALLIC VEINS ARE SITUATED, DO NOT, ON ANALYSIS, CONTAIN A PARTICLE OF THE METAL THEY ENCLOSE.



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East-India Company (says Mr. McCulloch) have, for a lengthened period, equalled those of the most powerful monarchies. At present they are greater than those of either Russia or Austria, being inferior only to those of Great Britain and France! Still, however, the Company's financial situation is the very reverse of prosperous. Vast as their revenue has been, their expenditure appears, in most instances, to have been still larger; and at this moment their debts exceed 60,000,000*l.*!" Let us now take a glimpse of it as it existed in the days of imperial Rome. In the age of Nero, the East-India trade was carried on by the river Nile; the merchandize proceeded in caravans to the Red Sea, where it was embarked for the Indian Ocean. The specie annually carried from Rome, upon this account, according to Pliny's computation, amounted to about 300,000*l.* sterling; and the usual returns, which arrived in December and January, yielded, in clear gain, a hundred for one!

EAU DE COLOGNE, a far-famed fragrant liquid, resorted to by the votaries of fashion, in this and many other countries, as a panacea against ailments of every kind; and it consequently forms an expensive companion of the toilet. It is nothing more or less than alcohol highly aromatized; but the ingredients are numerous, and should be compounded with great nicety.

EAU DE LUCE, a volatile preparation, made of white soap dissolved in alcohol, and the solution mixed with the spirit of sal ammonia.

EAVES, the edges of the roof of a house, which overhang the wall, for the purpose of throwing off the water.

EAVES-DROPPER, one who skulks under the eaves of houses, for the purpose of listening to what passes within.

EBB, the retirement or reflux of the tide.

EBONY, a hard, heavy, durable, black wood, which admits of a fine polish. It is the wood of the *Diospyros ebenus*, or eben tree, which grows in India, Madagascar, Ceylon, and the Mauritius. It is wrought into toys, and used for mosaic and inlaid work.

EBOULEMENT, in fortification, the crumbling or falling away of a wall or rampart.

EBRACTEATE, in botany, without a bractea or floral leaf.

EBULLITION, either the operation of boiling, or the effervescence which arises from the mixture of an acid and an alkaline liquor.

ECAUDATE, in botany, an epithet for plants which have no tail or spur.

ECBASIS, in rhetoric, those parts of the proemium in which the orator treats of things according to their events or consequences.

ECBOLE, in rhetoric, a digression whereby the speaker introduces some other person speaking in his own words.

ECCE HOMO, (Latin); "Behold the man!" a painting which represents our Saviour, with a crown of thorns on his head, given up to the people by Pilate. The title of it is taken from Pilate's exclamation, John xix. 5.

ECCENTRIC, in geometry, a term applied to circles and spheres which have not the same centre, and consequently are not parallel.—It also denotes a deviation from usual practice or established forms; as *eccentric* conduct.——*Eccentric circle*, in astronomy, the circle that circumscribes the elliptical orbit of the planet.

ECCENTRICITY, in astronomy, the distance between the sun and the centre of the eccentric.

ECCHYMOSIS, in medicine, an appearance of livid spots on the skin occasioned by an extravasation of the blood from a vein betwixt the flesh and skin.

ECCLESIANS, an epithet formerly given to those who stood up for the spiritual authority of the church in opposition to the civil power.

ECCLESIASTES, a canonical book of the Old Testament, the design of which is to show the vanity of all sublunary things. The generality of commentators believe this book to be the produce of Solomon's repentance, after having experienced all the follies and pleasures of life.

ECCLESIASTIC, a person in orders; one who is consecrated to the service of the church and the ministry of religion.

ECCLESIASTICUS, an apocryphal book of Scripture; so called from its being read in the church, *(ecclesia)*, as a book of piety and instruction, but not of infallible authority. The author of this book was a Jew, called Jesus the son of Sirach. The Greeks call it the wisdom of the son of Sirach.

ECCOPROTIC, in medicine, a mild cathartic. Any medical preparations having the quality of promoting gentle alvine discharges are so called.

ECHELON', a term in military tactics borrowed from the French, signifying the position of an army with one division more advanced than another, somewhat like the steps of a ladder. A battalion, regiment, &c. marches *en echelon*, if the divisions of which it is composed do not march in one line, but on parallel lines. The divisions are not exactly behind each other, but each is to the right or left of the one preceding, so as to give the whole the appearance of a stairway. This order is used if the commander wishes to bring one part of a mass into action, and to reserve the other. The word *literally* means a ladder or stairway.

ECHINATE, or ECHINATED, a term given to whatever is prickly, or like the hedgehog; having sharp points; bristled.——In botany, an epithet for the seeds of plants that are rough and prickly; also for the pericarp of some plants.

ECHINITES, a fossil called *centronia*, frequently found in chalk-pits; a calcareous petrifaction of the echinus or sea-hedgehog.

ECHINOPS, or Globe-thistle, in botany, a genus of plants, class 19 *Syngenesia*, order 5 *Polygamia-segregata*; the flower of which is compound; consisting of a great



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number of floscules or small flowers, divided into several acute segments.

ECHINOPH'ORA, in botany, a genus of the *pentandria-digynia* class of plants, the corolla of which consists of five unequal patulous petals.

ECH'INUS, in ichthyology, a shell-fish set with prickles or spines; a genus of *Mollusca*. The *Echinus esculentus*, or edible sea-egg, is common on the coast of Europe, and is esteemed as an article of food. There are several species of the echinus, which have an orbicular, oval, or globular body, covered with spines. By means of these spines the animals change their position, and move from place to place. They are said to retreat to deep water on the approach of a storm, and preserve themselves from injury by attaching themselves to submarine bodies.——With botanists, a prickly head or top of a plant.——In architecture, a member or ornament near the bottom of the Ionic, Corinthian, and Composite capitals; so named from its roughness.

ECHIUM, or Viper's-bugloss, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs: the flower consists of a single petal, the tube being very short, and the limb erect, growing gradually wider at the extremity, where it is divided into five unequal segments.

EC'HO, a sound reflected or reverberated from some hard surface, and thence returned or repeated to the ear. As the undulatory motion of the air, which constitutes sound, is propagated in all directions from the sounding body, it will frequently happen that the air, in performing its vibrations, will impinge against various objects, which will reflect it back, and so cause new vibrations the contrary way: now if the objects are so situated as to reflect a sufficient number of vibrations back, viz. such as proceed different ways, to the same place, the second will be there repeated, and is called an echo; and the greater the distance of the object is, the longer will be the time before the repetition is heard: and when the sound, in its progress, meets with objects at different distances, sufficient to produce an echo, the same sound will be repeated several times successively, according to the different distances of these objects from the sounding body, which makes what is called a *repeated echo*. Echoes are not, however, caused by a mere repulsion of the sonorous particles of air, for then every hard substance would produce an echo; but it is supposed to require a certain degree of concavity in the repelling body, which collects several diverging lines of sound, and concentrates them in the place where the echo is audible, or, at least, reflects them in parallel lines, without weakening the sound, as a concave mirror collects in a focus the diverging rays of light, or sometimes sends them back parallel. The celebrated echo at Woodstock, in Oxfordshire, repeats the same sound fifty times. But the most singular echo we have ever heard of is that near Rosneath, a few miles from Glasgow. If a person placed at a proper distance from this echo plays eight or ten notes of a tune with a trumpet, they are correctly repeated by the echo, but a third lower; after a short pause, another repetition is heard, in a lower tone; and then, after another interval, a third repetition follows in a still lower tone.—As the reflection of sound depends on the same laws as those which regulate the reflection of light, on which the science of catoptrics depends, the doctrine of echoes is sometimes called the *catoptrics of sound*; the place of the sounding body is called the *phonic* centre, and the reflecting place or object, the *phonocamptic* centre.——ECHO, in architecture, any vault or arch constructed so as to produce an artificial echo. These are generally of a parabolic or elliptic form: of this kind is the whispering-gallery in St. Paul's cathedral.——*Echo*, in poetry, a sort of verse which returns the sound of the last syllable, the elegance of which consists in giving a new sense to the last words.

ECHOMETER, among musicians, a kind of scale or rule, serving to measure the duration and length of sounds, and to find their intervals and ratios.

ECLAIR'CISSEMENT, the clearing up of any thing not before understood.

ECLAMP'SIS, in medical science, scintillations or flashings of light which dart from the eyes; a symptom of epilepsy.

ECLAT, (French), a burst of applause; renown or approbation following some action or event.

ECLEGM', a medicine made by the incorporation of oil with syrups.

ECLECTICS, those philosophers who, without attaching themselves to any particular sect, select whatever appears to them the best and most rational from each.——The *Eclectics* were a sect of Greek philosophers who endeavoured to mould the doctrines of Pythagoras and Plato, and blend them with the theology of the Egyptians, and the tenets of Zoroaster. They borrowed many of the principal truths of Christianity from the catechetic school of Alexandria, and blending these with the mysticism of Pythagoras, the errors of Plato, and the superstition of Egypt, they hoped to reconcile the Christians and Pagans to the same opinions.

ECLIPSE, in astronomy, an interception or obscuration of the light of the sun, moon, or other luminary, by the interposition of another heavenly body between it and our sight. An eclipse of the *sun* is caused by the intervention of the moon, which totally or partially hides the sun's disc; an eclipse of the *moon* is occasioned by the shadow of the earth, which falls on it and obscures it in whole or in part, but does not entirely conceal it. In endeavouring to understand the true nature of eclipses, the mind must figure to itself the body of the sun, irradiating the earth on one side of its globe, which, being a solid body, intercepts the rays, and therefore projects a long shadow from its opposite side: now, when the moon happens to

IN A REAL ECHO, THE FIRST SOUND IS FROM NEAR SURFACES; THE SECOND, OR REPEATED ECHO, FROM SURFACES AT A DISTANCE.

THE DARK OR CENTRAL PART OF THE MOON'S SHADOW, IS CALLED THE "UMBRA;" THE LIGHTER PART IS CALLED THE "PENUMBRA."



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come in a line with this shadow, it falls upon her, and she is eclipsed. An eclipse of the moon is *partial*, when only a part of its disc is within the shadow of the earth; it is *total*, when all its disc is within the shadow; and it is *central*, when the centre of the earth's shadow falls upon the centre of the moon's disc. As the moon is actually deprived of her light during an eclipse, every inhabitant upon the face of the earth, who sees the moon, sees the eclipse. An eclipse of the sun, as we have said, happens when the moon, passing between the sun and the earth, intercepts the sun's light; and the sun can only be eclipsed at the new moon, or when the moon, at its conjunction, is in or near one of its nodes. An eclipse of the sun begins on the western side of his disc, and ends on the eastern; and an eclipse of the moon begins on the eastern side of her disc, and ends on the western.——The ancient Greeks and Romans had frightful ideas of eclipses, supposing them presages of the most dismal events. At Rome it was not allowed to speak publicly of any natural causes of eclipses.

ECLIP'TA, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia-superflua*. The species are all annuals.

ECLIP'TIC, in astronomy, the sun's path; or, a great circle of the celestial sphere, supposed to be drawn through the middle of the zodiac; or it may be defined, that circle of stars in the heavens, through which the earth would appear to move, if it were seen from the sun. The axis of the earth is, however, not perpendicular to the plane or level of the ecliptic, but declines from the perpendicular 23 degs. 28 min., which position it maintains throughout the orbit, causing the variations in the length of the day, and the four seasons.——*Ecliptic*, in geography, a great circle on the terrestrial globe, not only answering to, but falling within the plane of the celestial ecliptic.

EC'LOGUE, in poetry, a pastoral composition, in which shepherds are introduced conversing with each other, as the *eclogues* of Virgil. It is also used to denote any little elegant composition, written in a simple natural style and manner.

ECON'OMY, the frugal expenditure of money, with the prudent management of all the means by which property is saved or accumulated. It also means, a judicious application of time and labour. In a more extended sense, it denotes the regulation and disposition of the affairs of a state or nation, which is called *political economy*. And it is likewise applied to the regular operations of nature in the generation, nutrition, and preservation of animals or plants; as, animal *economy*, vegetable *economy*.

ECPHONE'SIS, in rhetoric, a figure of speech used by an orator to give utterance to the warmth of his feelings.

ECPHRAC'TIC, in medicine, that which has the property of dissolving or attenuating viscid matter and of removing obstructions.

ECPHYSE'SIS, in medicine, a quick breathing.

ECPIES'MA, in medicine, a fracture of the cranium when the bones press inwardly on the membranes of the brain.

ECPLEX'IS, in medicine, that state of motionless stupor in which a person appears to lie when in a trance.

ECRYTH'MUS, in medicine, a term applied to pulses which are entirely out of order.

ECS'TASY, that state of the mind in which the functions of the senses are either suspended or transported with raptures, by the contemplation of some extraordinary object.——In medicine, a species of catalepsy, when the person remembers, after the paroxysm is over, the ideas he had during the fit.

ECSTAT'ICI, a sort of diviners amongst the Greeks, who for a considerable time lay in trances, deprived of all sense and motion, but when they returned to their former state, gave strange accounts of what they had seen and heard during their absence from the body.

ECTROPIUM, in surgery, is when the eye-lids are inverted, or retracted, so as to show their internal or red surface, and cannot sufficiently cover the eye. Sometimes this is a simple or original disorder, and sometimes only a symptom, or consequence of another, as an inflammation, tumour, &c.

EC'TYPE, a word sometimes used by antiquarians, signifying an impression of a medal, seal, or ring, or a figured copy of an inscription or other ancient monument.

ED'DY, a current of water running in a contrary direction to the main stream.——*Eddy-tide*, or *Eddy-water*, the water which runs back contrary to the tide; or that which falls back on the rudder of a ship under sail, called *dead-water*.——*Eddy-wind*, the wind returned or beat back by any obstruction.

ED'ELITE, in mineralogy, a siliceous stone of a light gray colour.

EDEMA'TOUS, or ŒDEMA'TOUS, in medicine, an epithet denoting a white, soft, and insensible tumour.

EDGE, in a general sense, denotes the side or border of any thing; but is more particularly used for the sharp side of some weapon, instrument, or tool; as the *edge* of a sword, razor, &c.

EDG'INGS, in gardening, the series of small but durable plants, set round the edges or borders of flower-beds, &c.; as, an *edging* of box.

E'DICT, an order issued by a prince to his subjects, as a rule or law requiring obedience. In Roman history we frequently meet with the edicts of the emperors and the edicts of the prætors, containing notices to the people in what manner they intended to execute the laws.——*Edictum perpetuum* was a collection of all the laws which had been yearly published by the prætors in their edicts. It was so called because it was intended to continue in force





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increase the satisfactions, of the individual. * * * It is no wonder that visionary writers on education are greatly admired, though their directions can seldom be pursued. Innovation is indeed found to be so agreeable to the human mind, and is received by the unexperienced and injudicious with such avidity, that it becomes expedient to stand up in defence of those established practices, which, besides that they were originally reasonable, have been countenanced and supported by the uniform decisions of long experience. * * * I am the rather induced to defend that discipline which lays the foundation of improvement in ancient learning, because I think, and am not singular in the opinion, that not only the taste, but the religion, the virtue, and, I will add, the liberties of our countrymen, greatly depend upon its continuance. True patriotism and true valour originate from that enlargement of mind, which the well-regulated study of philosophy, poetry, and history, tends to produce; and if we can recal the ancient discipline, we may perhaps recal the generous spirit of ancient virtue." * * * With the foregoing extracts we might very properly conclude; but we are tempted to proceed; and we trust that the sound and wholesome remarks, which we thus glean, will make ample amends for the unusual length to which this article is extended. "When I turn my attention to my own country," says the venerable author, "I am willing to indulge the pleasing idea, that I see something in the national character of Englishmen, similar to the spirit of an ancient Roman. Of the Roman, a gravity and a dignity were the striking features. I mean not the disgusting severity of a puritanical exterior; but that respectable appearance, which naturally results from sentiments uniformly great; a gravity unallied to dulness, a dignity unconnected with opulence. My opinion of this flattering resemblance is not the effect of an unphilosophical predilection, or fortuitously adopted. It is suggested by observation, and confirmed by a review of the annals of the English. It is confirmed by their public conduct, ever generous, spirited, humane; by their private lives, sedate, contemplative, independent; by their writings, solid, nervous, and breathing a spirit of freedom and philanthropy, which almost rescues human nature from the imputation of degeneracy." * * * In another place he says, "I am not one of those who would promote the most distant tendency to despotism; but I would promote order and tranquillity, the most valuable ends of civilization. And I will assert, that when the persons of the rulers, in any department of the state, are rendered contemptible, the reverence necessary to restrain the vulgar is removed, and it is not wonderful that the consequences are riot and rebellion! Look into the senate of an empire in extent, connections, resources, and glories unrivalled. I will not be personal, though personality, in the present age, is the readiest method to excite popular attention. I will say nothing of the dissipated youth, the virulent rancour, the petulant abuse, the infidel principles, or the debauched morals, of any one senator: the senatorial rank should consecrate the persons who possess it." * * * And again, alluding to our religious institutions, he says, "If you have courage enough publicly to avow a primitive zeal for the cause of Protestantism, or for many of these virtuous sentiments and wholesome practices of our good old English forefathers, immediately some *travelled* gentleman steps forth, and finically exclaims, How narrow-minded, how illiberal, how unphilosophical, in these enlightened times, such antiquated ideas! Universal libertinism restrained only by *political* compliance with what every prater terms vulgar prejudice, forms the wisdom of these large-minded, liberal, and philosophical gentlemen. * * * But how is this levity to be shunned, and the national character restored? Adversity is a severe remedy for political disease, and not to be wished for till every lenient method has failed. A radical cure may be effected, *by restoring vigour to the proper modes of education.* Let the mind be early habituated to something solid for the employment of its energies; let it be supplied with food which will nourish and add strength and agility, not with such as only bloats, or overloads with morbid matter. Let the uncorrupted bosom of ingenuous youth imbibe the spirit, the virtue, the elevation of sentiment, and the rational love of liberty, which exalted the polished ancients to all that is great and glorious in this sublunary scene." * * * Then, having apostrophised the all-engrossing topics of public life, he exclaims, "I will not derogate from the glory of arms, or the merit of political conflicts; but I will say, that he effects a durable and substantial good to society, who successfully labours in adding to the *personal merit* of a rising generation. He sows the seeds of excellence, which may spring up in a happy soil to aggrandize a kingdom; and of virtues, which may in future ages bless and exalt human nature."—Another experienced writer in speaking of legislative interference, appositely says, "a little consideration will convince the man of a thinking mind, that the prescriptions of civil authority universally act as barriers to the improvement of the arts. The language of these prescriptions is, "hitherto shalt thou go, but no farther." It is, however, the business of education not to cramp but to guide the intellect. Its province extends to the inculcating of those fundamental principles upon which the structure of science is said to be built; the finishing of the structure ought to be left in a great measure to individual discretion. To the attainment of truth, freedom of inquiry is absolutely essential. A man may as well attempt to penetrate the mazes of an entangled wood in fetters, as to investigate the vast variety of intellectual subjects, with a mind trammelled by the imperative deci-



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THE EFFERVESCENT QUALITY OF MANY MINERAL WATERS IS OCCASIONED BY THE CARBONIC ACID WHICH THEY CONTAIN.

INSECTS ATTACK THEIR EGGS OR VARIOUS SUBSTANCES, WHICH, WHEN THEY ARE HATCHED, THE YOUNG ARE DESTINED TO FEED UPON.

sions of human institutions. And to the reducing of the general mind to this degrading predicament, do the prescriptions of civil authority in matters of literature usually tend. They lead to the fostering of prejudice, and to the perpetuation of error. They necessarily keep a nation stationary in the march of intellect, and repress that expansion of thought which is the parent of excellence. To a certain degree they may be productive of decided and powerful effects; but the uniformity of habit and character which they are calculated to produce, rather tends to lower man to the level of brutal instinct, than to raise him higher in the scale of the intelligent creation.——In conclusion, we beg to offer the following extract on the *education of females*: "In the estimation of reason, a lovely woman cannot be rendered less lovely, by the high cultivation of her talents; and many examples may be quoted to prove, that intellectual attainments are so far from being inconsistent with feminine graces, that they confer upon them additional attractions. In the mean time, let not domestic accomplishments be despised. On the contrary, let them be cultivated with the most diligent attention. But why should any portion of the field of knowledge be interdicted to any rational creature, who has an opportunity and who entertains a wish to enter it? and why should females be debarred from a source of elegant amusement, and of useful instruction peculiarly adapted to their domestic habits? The conduct of learned females is watched with an evil eye: their foibles are magnified; their errors are exaggerated; and whatever faults they commit, are laid to the account of literature, with the candour and good sense evinced by the self-complacent ignorant, who, on seeing a man executed for forgery, exclaimed, "such are the consequences of reading and writing!" When we consider what influence the female sex have in directing the early ideas of man, and also upon the habits of his future life, it is surely desirable that they should be endowed with every species of knowledge conveniently within their reach, which may turn that influence to good."——*Education in Greece and Rome.* The education of youth was strictly attended to both amongst the Greeks and Romans. Their minds and bodies were improved at the same time; their minds by every necessary branch of knowledge and learning, and their bodies by the manly exercises of the Campus Martius, or private contests and trials of skill, agility, and strength. It was the chief aim of the Romans, as well as Grecians, to make them shine in the senate and in the field, at the forum and the public games.—Oratory was an object which they kept constantly in view; and whatever was their destination, they endeavoured to acquire the arts of elocution and a habit of fluent reasoning. Lacedæmon trained her hardy sons to despise danger, endure fatigue, and seem insensible of pain—to maintain their honour unstained, to love their country, and hold in contempt riches, and all that train of enervating pleasures which are the companions of affluence.—So far all this was meritorious in a high degree; but how circumscribed must the space have been which was then allowed for intellectual exertion, when the whole world of science was a *terra incognita*.

EDULCORA'TION, in chemistry, the act of separating, purifying, or freeing any substance from the saline particles with which it may be impregnated, or those that may be left adhering to it after any operation.

EEL, in ichthyology, a genus of fishes belonging to the order *Apodes*, of which the common species are very long lived, viviparous, prolific, and torpid in winter; living on insects, worms, and eggs of other fish. In some respects eels resemble reptiles, particularly in their manner of moving by a serpentine winding of the body; and they often creep upon land, and wander about at night in search of snails and other food.

EEL-POUT, a species of *Gadus*, somewhat resembling an eel, but shorter. It is sometimes called *mustela-fluviatilis*.

EEL-SPEAR, a forked instrument with three or four jagged teeth, used for catching eels.

EFFECT', the consequence of a cause, sometimes simple and visible, sometimes complicated and invisible, but always simultaneous with the cause.——The word *effects* signify personal or movable goods.

EFFECTIVE, in military language, an epithet for a body of men that are fit for service: as 20,000 *effective* men.

EFFEMINACY, that weakness, delicacy, and indulgence in womanish pleasures which are characteristic of the female sex, but which in men are deemed a reproach.

EFFETE, barren. An animal becomes *effete* by losing the power of conception: the earth may be rendered so by drought, or by exhaustion of fertility.

EFFERVESCENCE, in a general sense, signifies a slight degree of ebullition in liquors exposed to a due degree of heat; but chemists apply it to that commotion excited in various fluids, either by the mixture of fluids with others of a different nature, or by mixing them with salts or powders of various kinds, as the effervescence of a carbonate with nitric acid.

EFFICIENT, producing the effect intended. The *efficient cause* is that which produces; the *final cause* is that for which it is produced.

EFFLORESCENCE, in chemistry, the spontaneous formation of small white threads, resembling the sublimated matter called flowers, on the surface of certain substances: this is sometimes called a *saline vegetation*. An efflorescence is also often seen on salt butter, or on walls formed with plaster. The word is likewise applied to the conversion of any body into a dry powder, or white dust, as in sulphate and carbonate of soda.



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**EFFLU'VIA**, the small particles perpetually flowing out of mixed bodies in the form of vapours, which are sometimes visible, as in the case of smoke or steam; and sometimes not perceptible, as the noxious exhalations from putrefying animal or vegetable substances. Malignant effluvia are assigned, by physicians, as the cause of the plague and other contagious diseases.

**EFT**, in zoology, *Lacerta vulgaris*, the common lizard, called also, in several parts of the kingdom, the newt, or evet.

**EFFU'SION**, in surgery, the escape of any fluid out of the vessel, or viscus naturally containing it; also the natural secretion of fluids.

**EGG**, a body formed in the females of fowls, &c., containing an embryo, or germ of the same species, under a cortical surface or shell; which shell becomes more brittle by being exposed to a dry heat. It is lined everywhere with a very thin membrane, which dividing at, or very near, the obtuse end of the egg, forms a small bag where only air is contained. In new-laid eggs, this follicus appears very little, but becomes larger when the egg is kept. Within this are contained the *albumen*, or white, and the *vitellus*, or yolk. The animal in the egg is first nourished by the albumen; and when this is consumed, by the vitellus, as with milk.—Most insects are oviparous.—The eggs of fish and some other animals are united by a viscous substance, and called spawn.—The quantity of eggs consumed in England appears almost incredible. Independently of the home produce, which is immense, the number of eggs annually imported from France, and other parts of the continent, is upon an average about 65 millions.

**EGG'-PLANT**, in botany, the *Solanum melongena* of Linnæus, so called because the fruit is like an egg.

**EG'LANTINE**, in botany, the *Rosa rubiginosa*, or sweet briar.

**E'GRET**, in ornithology, a bird of the heron kind, of which there are two, the *great* and the *little* egret.

**EI'DER-DOWN**, the soft feathers of the *eider-duck*, which are much esteemed.—*Eider-ducks* build their nests among precipitous rocks, and the female lines them with fine feathers plucked from her breast. This being collected, forms the *eider-down*.

**EJECT'MENT**, in law, a writ or action which lies for the recovery of possession of land from which the owner has been ejected, and for trial of title. Ejectment may be brought by the lessor against the lessee for rent in arrear, or for holding over his term; also by the lessee for years, who has been ejected before the expiration of his term.

**EKEBERG'ITE**, a mineral supposed to be a variety of *scapolite*.

**ELAB'ORATE**, an epithet expressive of great care, diligence, &c., used in the execution of any performance.

**ELÆAG'NUS**, or Dutch-myrtle, in botany, a genus of trees, belonging to the *tetrandria-monogynia* class, the characters of which are, that it has no flower-petals, and the fruit is an oval, obtuse, and smooth drupe, including an oblong kernel or nut.

**ELÆOCAR'PUS**, in botany, a genus of the *polyandria monogynia* class of trees, the calyx of which is a five-leaved perianthium; the corolla consists of five jagged torn petals, of the length of the cup; the fruit is a roundish drupe; and the seed a crisp spherical nucleus.

**ELÆOM'ELI**, a gum which drops from the olive-trees in Syria. It is thicker than honey, and of an oily nature.

**ELA'OLITE**, called also *fellatein*, a mineral more or less translucent, of a greasy appearance, having a crystaline structure, and varying in its colour from greenish blue to flesh red.

**ELASTI"CITY**, or **ELASTIC FORCE**, that inherent property of bodies by which they restore themselves to their former figure, after any external pressure or tension, very observable in a bent bow, steel springs, and the like. A *perfectly elastic* body, is that which restores itself with the same force wherewith it was bent, or depressed; those which do not restore themselves with exactly the same force, being called *imperfectly elastic* bodies. The air is *elastic*; vapours are elastic; and when the force compressing them is removed, they instantly expand or dilate, and recover their former state. Elasticity, indeed, seems to vary, according to the different densities of bodies; for the more metals are hammered, the more elastic they become.

**ELA'TER**, in entomology, a genus of four winged flies of the order *coleoptera*, the body of which is oblong, and the antennæ setaceous; and when the insect is laid on its back, it leaps with great agility.

**ELATE'RIUM**, a substance deposited from the very acrid juice of the *Momordica elaterium*, or wild cucumber. It is in thin cakes, of a greenish colour and bitter taste, and is a powerful cathartic.

**EL'ATIN**, the active principle of the elaterium, from which the latter is supposed to derive its cathartic power.

**ELBOW**, in anatomy, the juncture of the *cubitus* and *radius*; or the outer angle made by the flexure or bend of the arm.—*Elbow*, in architecture, a term used for an obtuse angle of a wall, building, road, &c., which divides it from its right line.

**EL'DER**, a person advanced in life, and who, on account of his age and experience, is selected to fill some important office. In Jewish history, the *elders* were persons the most considerable for age, experience, and wisdom. Of this sort were the seventy men whom Moses associated to himself in the government of his people: such also were those who afterwards held the first rank in the synagogue, as presidents. In the first Christian churches, *elders* were persons who enjoyed offices or ecclesiastical functions, and the word includes apostles, pastors, presbyters, bishops, or overseers: hence the first councils of the Christians were called *presbyteria*, or councils of *elders*. In the modern presbyterian churches, *elders* are officers





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who with the ministers and deacons, compose the sessions of the kirk, and have authority to inspect and regulate matters of religion and discipline.

EL'DER, a tree or genus of trees, the *Sambucus*, of several species. Some bear black, some white, and others red berries. The stem and branches contain a soft pith.

ELEATIC, an epithet given to a certain sect of philosophers, so called from Elea, a town of the Lucani, where most of its celebrated teachers were born.

ELECAMPA'NE, in botany, the *Inula*, a genus of plants, of many species. The common elecampane has a perennial, thick, branching root, which is used in medicine as a sudorific and expectorant.

ELECT', in theology, among Calvinists, a term for those whom they believe God has chosen, or predestinated to be saved. ——*Elect*, in matters of polity, signifies chosen, but not inaugurated. Thus the lord mayor of London, before his predecessor's mayoralty is expired, is called the lord mayor *elect*.

ELECTION, the act of choosing a person to fill an office or employment, by any manifestation of preference; and is applicable to the choice of members of the legislature, which takes place within every seven years; to the choice of parish officers, annually; and to the admission of members into societies. Sometimes it is practised by show of hands; sometimes by ballot, and at others, by every elector giving his vote separately, with an oath in regard to his right and integrity.——*Election* is also the state of a person who is left to his own free will, to take or do one thing or another, which he pleases.——*Election*, in theology, divine choice, by which persons, according to the calviuistic creed, are distinguished as objects for salvation by the special grace of God, without reference to their good or bad deeds.

ELECTIVE, dependent on choice, as an *elective* monarchy: opposed to hereditary.

ELECTORATE, the dignity or territory of an elector in the German empire.

ELECTOR, in law, any one who has the right of giving his vote at an election, particularly at an election of a member of parliament.——*Elector*, in political history, the title of such German princes as formerly had a voice in the election of the emperor of Germany.

ELECTRIC, a term for any substance capable of exhibiting the phenomena of electricity, either by friction or otherwise, and of resisting the passage of it from one body to another. Hence an *electric* is called a non-conductor.——*Electric Fluid*, a fine rare fluid, supposed to issue from and surround electrical bodies.

ELECTRI'CITY, the operation of an extremely subtile fluid, in general invisible; but which appears to be diffused through most bodies; is remarkable for the rapidity of its motion, and discovers itself to be one of the principal agents in nature. The name is derived from *electrum*, (amber,) a substance the attractive power of which was observed at least six hundred years before the Christian era: electricity, however, scarcely became a distinct object in science before the commencement of the seventeenth century, when a book, containing accounts of several electrical experiments, was written by Dr. William Gilbert; and it is only since the year 1746, when the *Leydenphial* was discovered, that it has advanced with any considerable rapidity. From that time, however, electricity became the general subject of conversation, and, as a science, it advanced with great rapidity under the auspices of Franklin, Priestley, and others. The earth, and all bodies with which we are acquainted, are supposed to contain a certain quantity of an exceedingly elastic inviable fluid, called the electric fluid. This certain quantity belonging to all bodies may be called their natural share; and which of itself, in its dormant state, produces no sensible effect; but as soon as the equilibrium is disturbed, and the surface of any substance becomes possessed of more than its natural share, it exhibits the phenomena of attraction and repulsion, and other remarkable effects are produced according to the quantity of excitation.—Bodies capable of accumulating and retaining the electric fluid are impervious to its power, and in proportion as they are capable of being excited, so are they less pervious; while, on the other hand, those which are more pervious are less capable of excitation. They are called *electrics*, or *non-conductors*, in distinction from those which are capable of receiving and transmitting electricity, and on that account called conductors. To the class of electrics belong resins, bitumens, glass, dry animal substances, feathers, paper, white sugar, oils, chocolate, &c. Substances of this description may be excited by friction, so as to exhibit the electric appearances of attracting and repelling light bodies, and emitting sparks or flashes of light, attended with a sharp snapping sound; and such is the rapidity of the electric fluid in motion, that no perceptible space of time is required for its passage to any known distance. It is now thoroughly ascertained that lightning is the rapid motion of vast masses of the electric matter, and thunder is the noise produced by the motion of lightning. Metallic points silently attract electricity from the bodies charged with it; hence the use of pointed conductors to secure buildings from the effects of lightning. The *aurora borealis*, or northern lights, are (as we have observed) the effects of the electric fluid passing through highly rarefied air. It is also well known, that earthquakes, whirlwinds, and water-spouts are generally accompanied with, and dependent upon electrical phenomena.——Among the numerous philosophic enquirers on this interesting subject, the nature of which is daily further illustrated by the experiments of scientific men, none have given it more attention, or have more systematically developed its causes and effects, than Professor



ELECTRIC CHARGE SENT THROUGH A CHAIN OF WIRE SHORTEN IT, AND INCREASE ITS THICKNESS BY LATENT EXPANSION.

THE EFFECTS OF ELECTRICITY IN THUNDER-STORMS WERE FIRST EXPERIMENTALLY DEMONSTRATED BY DR. BENJAMIN FRANKLIN.

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Faraday, whose series of experiments, which were read before the Royal Society during the last year, are an honourable example of persevering industry in the cause of science. It is not within the scope of this work to enter at large into this or any other science; but we are desirous, when we cannot do more, to direct attention to the best sources of information, and to render honour where honour is due. We will therefore now dismiss the article, by referring to the Proceedings of the Royal Society, and the Scientific and Literary Periodicals generally, for further details. But there is something so singular in the following account of an "electrical lady," authenticated by a respectable physician who communicated it to the editor of "Silliman's Journal," in which it recently appeared, that we insert it as a curiosity. He states, "that on the evening of Jan. 28th, during a somewhat extraordinary display of northern lights, the person in question became so highly charged with electricity, as to give out vivid electrical sparks from the end of each finger to the face of each of the company present. This did not cease with the heavenly phenomenon, but continued for several months, during which time she was constantly charged, and giving off electrical sparks to every conductor she approached; so that she could not touch the stove, nor any metallic utensils, without first giving off an electrical spark, with the consequent twinge. The state most favourable to this phenomenon was an atmosphere of about 80 deg. Fahrenheit, moderate exercise, and social enjoyment. It disappeared in any atmosphere approaching zero, and under the debilitating effects of fear. When seated by the stove, reading, with her feet upon the fender, she gave out sparks at the rate of three or four a minute; and under the most favourable circumstances, a spark that could be seen, heard, or felt, passed every second! She could charge others in the same way, when insulated, who could then give sparks to others. To make it satisfactory that her dress did not produce it, it was changed to cotton and woollen, without altering the phenomenon. The lady is about thirty, of sedentary pursuits, and delicate state of health."

ELECTRI'CIAN, a person versed in electricity, and who has scientifically investigated its properties by observation and experiments.

ELECTRICAL MACHINE, an instrument or apparatus contrived for rubbing electrics and conductors together, and for collecting the electric fluid from surrounding bodies. There are various kinds; but the cylindrical machine is in most common use. This consists of a glass cylinder, fixed in such a manner that it may be turned with a winch; a cushion, supported by a glass pillar, and having a piece of silk which comes between it and the cylinder; and a tube, supported by a glass pillar, which is called the prime conductor, or simply the conductor.——*Electrical rubber*, a part of the electrical apparatus, consisting of black oiled silk, which serves to aid the friction in the electrical machine.—— *Electrical shock*, the sudden explosion between the opposite sides of a charged electric.

ELECTRICAL-EEL, in ichthyology, the *Gymnotus electricus* of Linnæus, a fish so called from its power of producing an electrical shock whenever it is touched. By this power it stupifies, and then seizes, such animals as venture to approach it. ——The properties and habits of the electrical eel have lately more particularly come under the notice of scientific men, from the circumstance of one having been brought to this country from the Amazon river, and exhibited at the Gallery of Practical Science, London. "On October 22," says the *Athenæum*, "Professor Faraday, in the presence of Professors Daniell, Owen, Wheatstone, and others, succeeded in obtaining from it the electric spark; and one of the party, who had the temerity to grasp the creature with both hands, had his curiosity satisfied with a shock, which, if he were before incredulous, must have most effectually removed all doubts as to the electric properties of the animal. The electricity appears to be of the most intense character, being communicated by simply immersing the hands in the vessel of water containing the eel. By one shock, not only was the needle of a galvanometer deflected, but chemical action and magnetic induction obtained."—This specimen of the *Gymnotus electricus* having been entrusted to the care of Mr. T. Bradley, he has favoured the public with an interesting account of its habits, through the medium of the *Magazine of Natural History*, from which we learn, that when the eel is eager for food, it swallows it without giving it a shock; yet there is reason to believe that at the moment of seizing a fish, the eel discharges its electricity through the water, since a shock has been perceived by a person at that moment having his hands immersed in the tub in which the eel is kept. If the *Gymnotus* do not see the small fish, he appears to be aware of its presence, and seeks it; and during the motions of the two animals, if the fish happen to touch the eel, it generally receives a shock that paralyzes it, causing the victim to float, belly upwards, on the surface, till it is noticed by the eel, who instantly swallows it. According to the opinion of Dr. Faraday, who has carefully examined the animal, its electric power is identical with common electricity, though more readily developed. And it has been further remarked, that whilst the hinder parts were negatively electrified, the head and neck were positively so; and a series of electric sparks, as well as an elevation of temperature, were elicited.

ELECTRO-CHEMISTRY, that science which treats of the agency of electricity and galvanism in effecting chemical changes. ——A powerful electro-chemical battery has been executed by Mr. E. M. Clarke, at the Gallery of Science, Lowther Arcade,



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THE CHARACTERISTIC OF TRUE HEROES IS A CALM AND MEDITATIVE CONTEMPLATION OF GRIEF, NOT THE AGONY OF SUFFERING.

London, by which the most surprising effects are produced. It rapidly fuses a copper rod, of a quarter of an inch in diameter; yet, notwithstanding such intense power, the experimenter holds the conducting wires in each hand, evidently without receiving any shocks from the battery.

ELECTRO MAG'NETISM, that branch of electric science which shews the agency of electricity and galvanism in communicating to certain substances magnetic properties. Thus we speak of *electro-magnetic* phenomena in the atmosphere, &c.

ELECTROM'ETER, an instrument for measuring the quantity or intensity of electricity, and determining its quality.

ELECTRO-MOTION, the motion or passing of electricity from one metal to another, by the attraction of one metal plate in contact with another. That which produces electro-motion is called the *electromotive power*.

ELECTROMOTOR, an apparatus so called by Volta; a mover of the electric fluid.

ELECTRO-NEG'ATIVE, repelled by bodies negatively electrified, and attracted by those positively electrified.——Electro-*positive*, attracted by bodies negatively electrified, or by the negative pole of the galvanic arrangement.

ELECTROPHOR, or ELECTROPH'ORUS, a kind of substitute for an electrical machine, consisting of two plates, one of which is a resinous electric and the other metallic.

ELECTROTYPE. [See VOLTAIC ENGRAVING, for a minute account of the processes employed in this new and interesting branch of science.]

ELECTRUM, in mineralogy, an argentiferous gold ore, of a pale brass yellow colour.——Also *Amber*, [which see.]

ELECTUARY, in pharmacy, a form of medicine composed of powders, or other ingredients, incorporated with some conserve, syrup, &c.

ELEEMOS'YNARY, an epithet for whatever pertains to the use and management of charitable donations, whether intended for the relief of the poor or sick, or appropriated to education. A hospital founded by charity is an *eleemosynary* institution for the sick; a college founded by donations is also *eleemosynary*; and so is the corporation which is entrusted with the care of such institutions.

EL'EGANCE, in a general sense, is that which pleases by its symmetry, purity, or beauty; and is select, as distinguished from what is common.——In literature, *elegance of composition* consists in well chosen words and phrases, arranged in an appropriate and happy manner. It implies neatness, purity, and perspicuous arrangement; a style calculated to please a delicate taste, rather than to excite admiration or strong feeling.——In speaking, it includes propriety of diction and rich expressions with gracefulness of action.——In painting, it implies a certain manner which embellishes and heightens objects; as in Correggio, where, notwithstanding all the defects as to justness of design, there is an elegance even in the manner of the design itself, as well as in the turn of the attitudes, &c.——In architecture, *elegance* consists in the due symmetry and distribution of the parts of an edifice, or in regular proportions and arrangement.——It is also applied to various works of art or nature remarkable for their beauty of form, &c.

ELE'GIT, in law, a writ of execution, which lies for a person who has recovered debt or damages; or upon a recognizance in any court, against a defendant that is not able in his goods to satisfy his creditors.

EL'EGY, a mournful and plaintive kind of poem. The principal writers of elegiac verse among the Latins, were Propertius, Ovid, and Tibullus; the chief writers of elegy among the Greeks, were Callimachus, Parthenius, and Euphorion.

EL'EMENT, in physiology, a term used to denote the original component parts of bodies, or those into which they are ultimately resolvable. In the ancient and still popular sense of the word, the elements are understood to be four in number; namely, fire, air, earth, and water; but by the researches of modern science it is fully demonstrated that earth is a compound of many earths; air, a compound of at least two gases; water, a compound of hydrogen and oxygen; and fire, only the extrication of light and heat during combustion. Modern chemistry has, in fact, determined that an element is merely the last result of chemical analysis, or that which cannot be decomposed by any means now employed.——*Elements*, in a figurative sense, is used for the principles and foundations of any art or science, as "Euclid's Elements," &c.——*Elements*, in divinity, the bread and wine prepared for the sacrament of the Lord's Supper.

EL'EMI, a resin, of a strong aromatic odour and a hot spicy taste, which exudes from incisions made through the bark of the *Amyris elemifera*, a small tree or shrub of South America. The crystaline resin of elemi is called *elemine*, and is used in making lacquer.

ELEMEN'TARY, an epithet expressive of that which is uncompounded, or having only one principle or constituent part. It also denotes *rudimental*, or *initiatory*; as, an *elementary* treatise.

ELEN'CHUS, in logic, a sophism, or fallacious argument, which deceives the hearer under the appearance of truth.

EL'EPHANT, the largest, strongest, and most sagacious of all quadrupeds. The form of this animal is altogether awkward; the head is large, the eyes small, and the ears large and pendulous; the body is thick, and the back much arched; but the most singular part of the structure of the elephant is his trunk or proboscis, by which he conveys food and drink to his mouth. The eyes are small and the feet short, round, clumsy, and distinguishable only by the toes. The trunk is a cartilaginous and

THE EMPLOYMENT OF THE ELEPHANT HAS BEEN DISCONTINUED IN MODERN WARFARE, HIS TERROR OF FIRE-ARMS RENDERING HIM UNMANAGEABLE.



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muscular tube, extending from the upper jaw, and is seven or eight feet long. It is of such strength as to be capable of breaking off large branches from trees, whilst, at the same time, it is endowed with such exquisite sensibility, that it can grasp the smallest object. The two large tusks are of a yellowish colour, and extremely hard: the bony substance of these is called *ivory*. The disposition of the elephant is gentle, and his manners social; hence they are seldom seen except in troops. In wandering from place to place, the males, who are furnished with the largest tusks, put themselves at the head, and are the first to face every danger. In Abyssinia, they are pursued by hunters on horseback, in the following manner: two men, perfectly naked, mount the same horse; the hindermost is armed with a broadsword, the lower part of which is covered with cord, and the remainder is exceedingly sharp. In this manner they pursue the elephants, and having singled out one, they irritate him to attack them, when they ride up close to him, and the armed man slips from the horse on the off side, and, whilst the elephant's attention is engaged with the horse, he divides the tendons of his foot with a single blow, and thus disables him, when he is dispatched by lances. The Hottentots in South Africa hunt and shoot them. They are oftener, however, taken alive in pitfalls, or are driven into enclosures; and when gradually brought into subjection, by caresses and kind treatment, they become the most gentle and obedient of all domestic animals. To keep an elephant in full vigour, he requires daily about a hundred pounds of rice, either raw or boiled, besides fresh herbage to cool him, and about forty gallons of water as drink. —We learn, in ancient history, that elephants were first used in war by the Greeks in the time of Alexander the Great; at least there is no mention of them before. They carried upon their backs large towers, containing from ten to thirty soldiers, who threw missive weapons from thence upon the enemy, being themselves secured within their wooden walls; while the animals did great execution, by terrifying, tearing and trampling down both horses and men.

EL'EPHANT-BEETLE, in entomology, a large species of *Scarabæus*, or beetle, found in South America. It is covered with a hard black shell; is nearly four inches long; and has a proboscis an inch and a quarter in length.

ELEPHANTI'ASIS, a species of leprosy, which derives its name from the skin being covered with incrustations like those of the elephant, and the legs swelling to an immense size. It is a direful chronic disease, and regarded as contagious.

ELEPHANTINE, in Roman antiquity, an appellation given to the books wherein were registered the transactions of the senate and magistrates of Rome, of the emperors or generals of armies, and even of the provincial magistrates, the births and classes of the people, and other things relating to the census. They were so called, perhaps, as being made of ivory.

ELEVATION, in its primary sense, denotes exaltation; the act of raising from a lower place to a higher; or, figuratively, the act of exalting in rank; as, the *elevation* of a man to a throne.——In architecture, an orthographic or upright draught of a building.——*Elevation*, in astronomy, altitude; the height of the equator, pole, or stars, &c., above the horizon.—In gunnery, the angle which the chace of a cannon or mortar makes with the plane of the horizon.——*Elevation of the Host*, in the Romish church, that part of the ceremony of the mass which consists in the priest's raising the host above his head for the people to adore.

EL'EVATOR, in anatomy, the name of several muscles, which serve to raise the parts of the body to which they belong; as the elevator of the external ear, the epiglottis, &c.

EL'EVATORY, in surgery, an instrument used in trepanning, for raising depressed or fractured parts of the skull.

ELEUSIN'IA, in Grecian antiquity, a solemn and mysterious festival in honour of Ceres, kept every fourth year by the Coleans and Philiasians, and every fifth year by the Athenians, Lacedemonians, Parrhasians and Cretans, at Eleusis, a borough of Attica. It was transferred from thence to Rome by the Emperor Adrian. The *Eleusinia* was the most celebrated and mysterious solemnity of any in Greece, and often called by way of eminence *mysteria*. The mysteries were of two kinds, the greater and the less; the less were preparatory to the greater. They consisted of a solemn representation of what was supposed to pass in the regions of Elysium and Tartarus; and their chief design was, by sensible means, to spread among the people a conviction of the immortality of the soul, and of a future state of rewards and punishments. To reveal the secrets of the Eleusinian mysteries was looked upon as a crime that would not fail to draw down the vengeance of heaven. The person who presided at these rites was called Hierophantes, or the revealer of holy truths.

ELEUTHE'RIA, in Grecian antiquity, a festival celebrated at Platæa, in memory of the defeat of Mardonius, the general of Xerxes; and in honour of those who gallantly sacrificed their lives for the liberty of their country. It was held every fifth year, when prizes were contended for.

ELF, a term now almost obsolete, but formerly used to denote a fairy, or hobgoblin; an imaginary being, the creature of ignorance, superstition, and craft.

ELF-ARROWS, a name given to flints in the shape of arrow-heads, vulgarly supposed to be shot by fairies. They are frequently met with in Great Britain, and there is reason to believe they were weapons of offence among the ancient Britons.

EL'GIN MAR'BLES, a collection of splendid basso-relievos and fragments of



THE ELEPHANT AND THE DOG ARE THE ONLY ANIMALS WHICH SEEM TO COMPREHEND WHAT WE MEAN BY OUR LOOKS.

IN THE TRUNK OF AN ELEPHANT, SAYS CUVIER, THERE ARE NEARLY FORTY THOUSAND MUSCLES, WHICH HAVE THE POWER OF DISTINCT MOTION.

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statuary, which were brought from the Parthenon of Athens to England, in 1814, by Lord Elgin, (hence the name). They are now in the British Museum, having been purchased by government for 35,000*l*. They are unquestionably some of the finest remains of ancient art, and offer the richest field for study.

ELIMINA'TION, the ejection of superfluous matter from organised bodies.

ELIQUA'TION, in metallurgy, a separation of the different parts of mixed bodies, by the different degrees of fire required to melt them.

ELI'SION, in grammar, the cutting off or suppressing a vowel at the end of a word, for the sake of sound or measure, when the next word begins with a vowel; as, *th' ensanguined field.*

ELIX'IR, in medicine, a compound tincture, extracted from two or more ingredients.

ELK, a quadruped of the cervine genus. It is the largest of the deer kind, and is found in the northern regions of Europe, Asia, and America.

ELL, a measure of different lengths in different countries; but those mostly used in England are the English and Flemish ells; the former, three feet nine inches, or one yard and a quarter; and the latter only twenty-seven inches, or three-quarters of a yard.

ELLIP'SIS, in geometry, an oval, or curve line returning into itself, and produced from the section of a cone by a plane cutting both its sides, but not parallel to the base.——In grammar, a figure of syntax, by which one or more words are omitted, which the reader may supply; as, the horse I rode, for the horse *which* I rode. ——In rhetoric, a figure of speech whereby the orator, through excessive emotion, passes over many things, which, had he been cool, ought to have been mentioned.

ELLIP'SOID, in geometry, an elliptical spheroid, being the solid generated by the revolution of an ellipse about either axis.

ELM, in botany, *Ulmus*, a forest tree of the first magnitude, the wood of which is very serviceable where it may lie continually dry or wet, in extremes. Accordingly, it is proper for water-works, mills, pumps, aqueducts, and ship-planks beneath the water lines. It is also used for naves of wheels, handles for single saws, axle-trees, and the like. The elm is common in Great Britain, and lives to a great age. About twenty species are known, all inhabiting the temperate parts of the northern hemisphere.

ELMO'S FIRE, St.; an appearance caused by fiery meteors in the atmosphere: it is often seen playing about the masts and rigging of ships.——In explanation of this curious phenomenon, we submit the following extract of a letter from W. Traill, Esq., Kirkwall, to Professor Traill, dated May 16, 1837, describing its appearance at Orkney. "On Sunday, Feb. 19, 1837, in a tremendous gale, my large boat sunk, and it was late on Tuesday night before we could get her up and drawn to the shore, after which we had to wait till three o'clock next morning till the tide ebbed from her; she was during this time attached to the shore by an iron chain, about 30 fathoms long, which did not touch the water, when, to my astonishment, I beheld a sheet of blood-red flame, extending along the shore for about 30 fathoms broad and 100 fathoms long, commencing at the chain and stretching along the shore and sea in the direction of the shore, which was E.S.E., the wind being N.NW. at the time. The flame remained about ten seconds, and occurred four times in about two minutes. Whilst I was wondering not a little, the boatmen who, to the number of 25 or 30, were sheltering themselves from the weather, came running down apparently alarmed, and asked me if I had ever seen any thing like this before. I was about to reply, when I observed their eyes directed upwards, and found they were attracted by a most splendid appearance at the boat. The whole mast was illuminated, and from the iron spike at the summit, a flame of one foot long was pointed to the N.NW., from which a thunder-cloud was rapidly coming. The cloud approached, which was accompanied by thunder and hail; the flame increased, and followed the course of the cloud till it was immediately above, when it arrived at the length of nearly three feet, after which it rapidly diminished, still pointing to the cloud, as it was borne rapidly on to S.S.E. The whole lasted about four minutes, and had a most splendid appearance."

ELOCU'TION, in rhetoric, consists of elegance, composition, and dignity: the first comprehends the purity and perspicuity of a language, and is the foundation of elocution; the second ranges the words in proper order; and the last adds the ornaments of tropes and figures, to give strength and dignity to the whole. To which may be added, that there should be a certain musical cadence or intonation, to render it pleasing to the ear.

ELONGA'TION, in astronomy, the removal of a planet to the farthest distance it can be from the sun, as it appears to an observer on the earth. The term is chiefly used in speaking of Venus and Mercury, the arch of a great circle intercepted between either of these planets and the sun, being called the elongation of that planet from the sun.——*Elongation*, in surgery, an imperfect luxation, occasioned by the extension of the ligaments of a joint beyond its natural dimensions.

ELO'PEMENT, in law, the voluntary departure of a wife from her husband to go and live with an adulterer. In common acceptation, the secret departure of any female with her lover, either to be married or to live together illicitly.

E'LOPS, in ichthyology, a genus of fishes of the *Abdominal* order, having a smooth head, and a palate rough with teeth.

EL'OQUENCE, the art or act of speak-

IF SAILORS OBSERVE TWO FLAMES IN ST. ELMO'S FIRE, THEY CONSIDER IT A GOOD OMEN; IF ONLY ONE, THEY REGARD IT AS BAD.

THE AMERICAN OR WHITE ELM FREQUENTLY REACHES THE HEIGHT OF 100 FEET, WITH A TRUNK FOUR OR FIVE FEET IN DIAMETER.



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IN THEOLOGY, THE DOCTRINE OF "EMANATION" IS THAT WHICH REGARDS THE SON AND HOLY GHOST AS EFFLUXES FROM THE DEITY.

ing with grace, effect, and fluency, in which is comprehended a good elocution or utterance; correct, appropriate, and rich expressions, with animation, and suitable action. Cicero defines it, the art of speaking with copiousness and embellishment. Eloquence and rhetoric differ from each other, as the theory from the practice: rhetoric being the art which describes the rules of eloquence, and eloquence that art which uses them to advantage.

E'LUL, the name of a Jewish month, answering to part of August.

ELU'TRIA'TION, in metallurgy, the operation of pulverising a solid substance, mixing it with water, and pouring off the liquid, while the foul or extraneous substances are floating, or after the coarser particles have subsided, and while the finer parts are suspended in the liquor.

E'LYMUS, in botany, a genus of the *Triandria digynia* class of plants, the calyx of which is a common involucrum, consisting of four leaves, and containing several flowers in two spicule: the particular corolla are composed of two valves: the seed is oblong.

ELY'SIUM, or ELYSIAN FIELDS, in heathen mythology, the supposed residence of the blessed after death. The poets describe this region as consisting of beautiful meadows alternated with pleasant groves; where a serene and cloudless sky was spread over them, and a soft, celestial light shed a magical brilliancy over every object. The heroes there renewed their favourite sports; danced to the sound of the lyre from which Orpheus drew the most enchanting tones, or wandered through the most odoriferous groves, where the warbling birds carolled forth their harmony by the side of refreshing fountains. There the earth teemed with plenteous fruits, and the verdure of spring was perpetual; while all cares, pains, and infirmities, were exchanged for the purest bliss.

ELY'TRA, in entomology, a name for the wing-sheaths, or upper crustaceous membranes, which cover the wings of the insects of the beetle tribe.

EMANATION, the act of flowing or proceeding from some source or origin; or, the thing that proceeds from that action. Light is an *emanation* from the sun, wisdom, an *emanation* from God, &c.

EMANCIPATION, in the Roman law, the setting free a son from the subjection of his father. It differed from manumission, as the latter was the act of a master in favour of a slave, whereas emancipation put the son in a situation to manage his own affairs, and to marry without his father's consent, although a minor. The word *emancipation* was applied to the projects long entertained of redeeming the negroes from Christian slavery; and to the Catholic relief bill in England.

EMAR'GINATED, among botanists, an epithet for such leaves as have a little indenting on their summits; and accordingly as this indentation is terminated on each side, they are said to be *obtusely* or *acutely* emarginated.

EMASCULA'TION, the act of depriving a male of those parts which characterize the sex. It also denotes unmanly weakness.

EMBALM'ING, the opening a dead body, taking out the intestines, and filling the place with odoriferous and desiccative drugs and spices, to prevent its putrefaction. The Egyptians have always been celebrated for their adherence to this practice, and the skill with which they performed it. With some variation, it is still one of the peculiar customs of that nation. It appears to have been a metaphysical notion, inculcated as of their religion, that the soul continued with the body. There naturally followed an affectionate desire to do every thing that living creatures can suppose acceptable to the dead. They were even desirous of having the dead bodies of their parents in their houses, and at their tables, and believed, as has been suggested, that their souls were present also; and it was essential to this gratification that those bodies should be preserved in the most perfect manner possible.——Modern chemistry has made us acquainted with many means of counteracting putrefaction, more simple and more effectual than the laborious processes of the ancients.

EMBAR'GO, in commerce, a prohibition of sailing, issued by authority on all shipping, either out of port, or into port. It is generally to restrain ships from leaving a port.

EM'BASSY, the public function or employment of a public minister, whether ambassador or envoy.

EM'BER WEEKS, four seasons in the year more particularly set apart for prayer and fasting, namely, the first week in Lent, the next after Whitsuntide, the fourteenth of September, and the thirteenth of December.——*Ember Days*, particular days of fasting and humiliation in the Ember weeks.

EM'BER-GOOSE, in ornithology, a fowl of the genus *Colymbus*, and order of *Anseres*. It is of a dusky black colour, and inhabits the Orkney isles, Iceland, &c.

EMBERI'ZA, in ornithology, a genus of birds of the order of *Passeres*. They are chiefly known in English by the name of Bunting, except the Ortolan *(Emberiza hortulana)*, which is esteemed a great delicacy for the table.

EMBEZ'ZLEMENT, the act of fraudulently appropriating a thing to one's own use, which has been intrusted to one's care and management.

EM'BLEM, a kind of painted enigma, or certain figures painted or cut metaphorically, expressing some action, or instructing us in some moral truth.

EM'BLEMENTS, in law, a word used for the produce of land sown or planted by a tenant for life or years, whose estate is determined suddenly after the land is sown or planted, and before a harvest. In this case,

IN MANY INSTANCES, BODIES NOT EMBALMED HAVE BEEN PRESERVED FROM DECAY FOR CENTURIES, MERELY BY THE EXCLUSION OF THE AIR.



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the tenant's executors shall have the *emblements*. Sometimes it is used for any products that naturally arise from the ground.

EMBOLISM, in astronomical chronology, the insertions of days, months, or years, in an account of time, to produce regularity.

EMBONPOINT, *(French)*, a moderate and agreeable fulness of figure.

EMBOSSING, the forming or fashioning works in relievo, whether by raising, by carving, or by depression. It is, in short, a kind of sculpture, where the figures project from the plane whereon it is cut; and according as the figures are more or less prominent, they are said to be in *alto, mezzo*, or *basso relievo*.——*Embossing wood*, as in picture frames and other articles of ornamented cabinet work, is either produced by means of carving, or by casting the pattern in plaster of Paris, or other composition, and cementing it on the surface of the wood. ——*Embossing cloth*. Cotton, woollen cloth, silk, paper, and other fabrics, are embossed by the powerful pressure of revolving cylinders on which the required patterns are engraved.—The patent of an ingenious invention was taken out by Mr. T. Greig of Bury, Lancashire, in 1835, for both embossing and printing silk, cotton, &c., in one or more colours at one operation.

EMBRASURE, in architecture, the enlargement made of the aperture of a door or window, on the inside of the wall.——In fortification, a hole or aperture in a parapet, through which cannon are pointed and discharged.

EMBROCATION, in pharmacy, a lotion or combination of medicinal liquids, with which any diseased part is rubbed or fomented.

EMBROIDERY, figured work wrought on silk, cloth, stuffs, or muslins. The art of embroidery was invented in the east, probably by the Phrygians or Persians. At all events, it was introduced from Persia into Greece.——*Embroidering Machine*. Until of late embroidery work was entirely performed by hand, and was cultivated on account of its elegance, by ladies of rank; but since the invention of a most ingenious machine by M. Heilmann of Mulhause, many of them have been set up in England, France, and Germany. One of these machines having 130 needles, will perform as much as fifteen expert hand embroiderers, and requires merely the labour of one grown-up person and two assistant children.

EMBRYO, the first rudiments of the animal in the womb, before the several members are distinctly formed, after which it is called the *fœtus*.

EMBOUCHURE, in music, the aperture of a flute or other wind instrument.

EMENDATION, an alteration made in the text of any book by verbal criticism. ——In law, the correction of abuses.

EMERALD, a well-known gem of a beautiful green colour, somewhat harder than quartz, which occurs in prisms with a regular hexagonal base, and ranks next in value to the oriental ruby and sapphire. It becomes electric by friction, is often transparent, sometimes only translucent, and before the blow-pipe is fusible into a whitish enamel, or glass. The most intensely coloured and valuable emeralds are brought from Peru. ——In heraldry, another name for *vert*, or the green tincture in coat armour.

EMERGENT, in astronomy, an epithet for a star at the moment it goes out of the sun's beams, so as to become visible.——In chronology, the year or epoch from which any computation of time is made.

EMERSION, in astronomy, the re-appearance of the sun and moon after they have undergone an eclipse; also of a star that emerges from under the rays of the sun.

EMERY, in mineralogy, a compact variety of *corrundum*, very generally regarded as a sort of iron ore. It is of a blackish-gray colour, and so very hard as to scratch topaz. It consists of alumina, silica, and iron; and is used in the form of a powder for polishing hard minerals and metals. The lapidaries cut ordinary gems on their wheels, by sprinkling them with the moistened powder of emery; but it will not cut the diamond.

EMETIC, a medicine for emptying the stomach by vomiting.

EMETINE, in medicine, a peculiar vegetable principle, obtained from the ipecacuanha root, of whose emetic properties it is conceived to be the sole cause. In a dose of half a grain it acts as a powerful emetic, followed by sleep; and six grains produce violent vomiting, stupor and death.

EMICATION, a flying off in small particles, as from heated iron or fermenting liquors.

EMIGRANT, a person removing from his native country to reside in some foreign land.

EMIGRATION, the removal of inhabitants from one country to another, for the purpose of permanent residence. Of late years, various causes have conspired to favour the practice of emigration from the shores of Britain to her distant colonies; and there appears to be every prospect that similar causes will exist for some length of time to come; but when we consider how much resolution is required to abandon for ever the home to which man is bound by the strongest ties of kindred and habit, to seek an uncertain fortune in a land of strangers, there is no reason to believe that large masses will ever emigrate without the most urgent motives. Prohibitions of emigration are unjust, as well as impolitic, and always prove, that a government which allows them, has an incorrect idea of its rights. British subjects, however, are encouraged rather than restrained, and our surplus population find a wide field for the exercise of their talents and their spirit of enterprise in colonies which are daily rising into importance. Still we fear that many are led to leave their native country, and dwell in a "land of promise," who have no better information respecting their future prospects, than is to be derived from the flattering and deceptive pictures presented to them by the interested agents of colonial speculators.

IN PLINY'S TIME THE BEST EMERALDS CAME FROM SCYTHIA; AND IN ENCOMIUMS ON THEIR BEAUTY HE IS REALLY ELOQUENT.

AN EMERALD WITHOUT A FLAW IS SO RARE, THAT IT HAS PASSED INTO A PROVERB, AND IT IS ACCORDINGLY VERY HIGHLY PRIZED.



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EMINENCE, an honorary title given to cardinals. They were called *illustrissimi* and *reverendissimi*, until the pontificate of Urban VIII.

EMIR, a title of dignity among the Saracens and Turks. It was at first given to the caliphs, but when they assumed the titles of Sultan, that of Emir remained to their children.

EMISSARY, a secret agent sent to ascertain the sentiments and designs of another, and to propagate opinions favourable to his employer.

EMIT, to send forth or give out; as boiling water *emits* steam; animal bodies *emit* perspirable matter; putrescent substances *emit* noxious exhalations.

EMOLLESCENCE, in metallurgy, that degree of softness in a fusible body which alters its shape.

EMOLLIENTS, in medicine, such remedies as soften the asperity of the humours, and at the same time relax and supple the solids.

EMOTION, in a philosophical sense, an internal motion or agitation of the mind which passes away without desire. When desire follows, the motion or agitation becomes a *passion*.

EMPEROR, *(imperator)*, among the ancient Romans, a title of honour conferred on a general who had been victorious. It now denotes a sovereign prince, or supreme ruler of an empire; as, the emperor of Russia.

EMPALEMENT, in botany, the calyx or flower-cup of a plant.——In heraldry, a conjunction of coats of arms, pale-wise.

EMPHASIS, in rhetoric, a particular stress of utterance, or force of the voice and action, given to such parts or words of an oration, as the speaker intends to impress specially upon his audience.

EMPHYSEMA, in surgery, a puffy tumour, formed by the air insinuating itself between the skin and muscles, into the substance of the cellular or adipose membrane.

EMPIRE, the territory over which a government prevails; or the government or territory of an emperor. An empire is usually a territory of greater extent than a kingdom. Thus we say, the Russian *empire*; the Austrian *empire*; the sovereigns of which are denominated *emperors*. The British dominions are also called an empire: and since the union of Ireland, the parliament is denominated the *imperial* parliament.

EMPIS, in entomology, a genus of insects of the *Dipterous* order, having a mouth with an inflected sucker and proboscis, antennæ setaceous; and feelers short.

EMPIRIC, one who, without a professional education or a regard to the rules of science, makes experiments with medicines. Hence the word is used for a quack or charlatan of any kind.

EMPORIUM, a common resort of merchants for trade; particularly, a city or town of extensive commerce, or in which the commerce of an extensive country centres, or to which sellers and buyers resort from different countries.

EMPYEMA, in medicine, a disorder wherein purulent matter is contained in the thorax or breast, after an inflammation and suppuration of the lungs and pleura.

EMPLASTICS, an appellation given to medicines which constipate and shut up the pores of the body. Hence, *emplastic* means viscous, or adhesive, like a plaster.

EMPYREUM, or EMPYREAN, a term used by divines for the highest heaven, where the blessed enjoy the beatific vision. ——Hence we have the word *empyreal*, as pertaining to that region of space which is refined beyond aerial substance, where only pure fire or light is supposed to exist.

EMPYREUMA, in chemistry, the peculiar smell produced from burnt oils, in distillations of animal and vegetable substances.

EMPYREUMATA, in medicine, the remains of a fever after the critical time of a disease.

EMULGENT, in a literal sense, milking or draining out. In anatomy, the *emulgent* or renal arteries are those which supply the kidneys with blood.

EMULSION, in medicine, any milk-like mixture prepared by uniting oil and water, by means of another substance, saccharine or mucilaginous.

EMUNCTORY, in anatomy, a term for any part which serves to carry off the excrementitious parts of the blood and other humours; thus, the skin is the *emunctory* of the body, the nose the *emunctory* of the brain, &c.

ENALLAGE, a figure in grammar, where there is a change of one case or mood for another.

ENAMEL, a kind of coloured glass, principally formed by the combination of different metallic oxydes, and used in enamelling and painting in enamel. Enamels have for their basis a pure crystal-glass, or frit, ground up with a fine calx of lead and tin prepared for the purpose, with the addition usually of white salt of tartar. These ingredients baked together, are the matter of all enamels, and the colour is varied by adding other substances, and melting or incorporating them together in a furnace. Enamels are distinguished into transparent and opaque; in the former all the elements have experienced an equal degree of liquefaction, and are thus run into crystal glass, whilst in the others, some of their elements have resisted the action of heat more, so that their particles retain sufficient aggregation to prevent the transmission of light. They are used either in counterfeiting or imitating precious stones, in painting in enamel, or by enamellers, jewellers, and goldsmiths, in gold, silver, and other metals. This art is of so great antiquity, as to render it difficult, if not impossible, to trace to its origin. It was evidently practised by the Egyptians, from the remains that have been found on the ornamented envelopes of mummies. From Egypt it passed into Greece, and afterwards into Rome and its

BLACK ENAMELS ARE MADE WITH PEROXYDE OF MANGANESE, OR PROTOXYDE OF IRON, TO WHICH A PORTION OF COBALT IS ADDED.

RED ENAMELS, VERING WITH THE FINEST CARMINE, MAY BE OBTAINED FROM THE PURE OXYDE OF COPPER, IF PROPERLY PREPARED.



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provinces, whence it was probably introduced into Great Britain, as various Roman antiquities have been dug up in different parts of the island, particularly in the barrows, in which enamels have formed portions of the ornaments.——*Painting in enamel, &c.* is performed on plates of gold or silver, but more commonly of copper, enamelled with the white enamel: the colours are melted in the fire, where they take a brightness and lustre like that of glass. This painting is prised for its peculiar brightness and vivacity, which is very permanent; the force of its colours not being effaced or sullied by time, as in other painting, and continuing always as fresh as when it came out of the workman's hands.

ENANTE'SIS, in anatomy, a meeting or near approach of the ascending and descending vessels.

ENANTIO'SIS, a rhetorical figure, where that which is spoken negatively, is to be understood affirmatively.

ENARTHRO'SIS, in anatomy, that species of articulation which consists in the insertion of the round end of a bone in the cavity of another, forming a movable joint.

ENCÆ'NIA, in antiquity, anniversary feasts to commemorate the completing or consecrating any new and public work, &c. In modern times, this term is used for any commemorative festival.

ENCAMP'MENT, the act of pitching tents for the accommodation of an army in the open country.

ENCAUS'TIC PAINTING, a peculiar mode of painting in wax, liquefied by fire; by which the colours acquire considerable hardness, brilliance, and durability. Ancient authors often mention this species of painting, but we have no ancient pictures of this description, and therefore the precise manner formerly adopted is not completely developed, though many moderns have closely investigated the subject, and described their processes. As the thing chiefly regarded in encaustic painting was the securing of permanence and durability, by the application of fire, the word *encaustic* has been applied, in a very general sense, to other processes, in which both the material and the mode of applying the heat, are entirely different from what is conceived to have been the ancient materials and modes. The moderns have used the term for painting on porcelain, and work in enamel; and in the same way it was given to the painting on glass of the middle ages, such as is still seen in the windows of some Gothic churches. It has also been just as erroneously applied to works in metal; where gold and silver were inlaid, melted, or laid on, and of everything which was gilt or silvered by fire; which was called gold or silver encaustic.

ENCE'INTE, in fortification, the wall or rampart which surrounds a place, sometimes composed of bastions or curtains. It is sometimes only flanked by round or square towers, which is called a Roman wall.——In law, a term for a state of pregnancy.

ENCEPH'ALI, in medicine, worms generated in the head, where they cause such great pain as sometimes to occasion the loss of reason.

ENCHANT'MENT, the use of magic arts and spells, or the invocation of demons, in order to produce wonderful or supernatural effects.

ENCHA'SING, or CHA'SING, the art of enriching and beautifying gold, silver, &c., by some design represented thereon, in low relievo. It is performed by punching, or driving out the metal, to form the figure, from within side, so as to stand out prominently from the plane or surface of the metal.

ENCHYRID'ION, a manual or small volume.

ENCLAVE', in heraldry, denotes something let into another, especially when the piece, so let in, is square.

ENCLI'TIC, in grammar, a particle so closely united with any other word as to seem to be part of it, as *que*, in *virumque*.

ENCLOSING LAND, the parting off of common grounds into distinct possessions.

ENCO'RE, (French, pron. *ongkore*), a word signifying *again*; used by the audience at theatres, and other places, when they call for a repetition of a particular song, &c.

ENCROACH'MENT, in law, an unlawful intrusion or gaining upon the rights and possessions of another.

ENCYCLOPÆ'DIA, a general system of instruction or knowledge, embracing the principal facts in all branches of science and the arts, properly digested, and arranged in alphabetical order. A contemporary writer, speaking of the effects which the celebrated French *Encyclopedie* had in influencing public opinion, very truly observes, that "there is hardly an instance to be found in which the literati of a nation have obtained so extensive and powerful an influence on political sentiment as the French literati, and particularly the French encyclopædists. Their philosophy, too, was a fashionable philosophy, a philosophy for common life, favourable for wit and gaiety. Instead of proceeding with steady steps to the goal of truth, they hurried to and fro, with daring leaps, and imagined they had reached the mark, if they could maintain an opinion which contained something new and paradoxical. This mixture of philosophy with elegant literature became still more interesting on account of the opinions which men like Mably, Condillac, Mercier, Raynal, Buffon, Helvetius, Diderot, and D'Alembert, advanced on the subjects of religion and civil government, for which a prohibition was laid on the further progress of the work. But the printers only, and not the authors, were punished, and the government was soon after obliged to permit the work to proceed, as it was too weak to prevent it. To the encyclopædists, who were connected with the highest circles at that time, is justly attributed a very important influence on the French revolution." Too true indeed it is, that 'instead of proceeding with steady steps to the goal

THE WHITE ENAMEL IN IMITATIVE GOLD TRINKETS IS MERELY GLASS RENDERED OPAQUE BY THE ADDITION OF OXIDE OF TIN.

A SKILFUL ENAMELLER WILL IMITATE THE EYES OF HUMAN BEINGS SO ACCURATELY, AS TO RENDER IT DIFFICULT TO DISTINGUISH THEM.



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THE SARCASTIC VOLTAIRE OBSERVES, "THE ENGLISHMAN GAINS UPON US TWO HOURS A-DAY, BY SWALLOWING HALF OF ALL HIS WORDS."

of truth,' they flattered the prejudices and called into action the worst passions of mankind, spreading a moral pestilence over the whole civilized world, which is still insinuating itself, in countless channels, through every class of society.

ENCRATI'TES, in church history, a sect which appeared towards the end of the second century: they were called *encratites*, or *continentes*, because they abstained from marriage, and the use of wine and animal food.

EN'DIVE, an herbaceous plant, a sort of succory, used as a salad: the *Chicorium endivia* of Linnæus.

ENDORS'ING, the writing one's name on the back of a bill of exchange or check: by which responsibility for its amount is incurred, if duly presented and not paid.

ENDOW'MENT, in law, the act of giving or assuring a dower to a woman. Also, the assigning certain rents and revenues for the maintenance of a vicar, almshouses, &c.—— The word endowment has also a more enlarged signification, implying any quality or faculty bestowed on man by the Creator.

EN'EMA, in medicine, a clyster.

EN'EMY, in a political sense, any one belonging to a nation with whom our own country is at war.——In law, it denotes an alien or foreigner, who in a public capacity, and with a hostile intention, invades any kingdom.

EN'ERGY, the internal or inherent power, virtue, or efficacy of a thing; as, Danger will rouse our dormant *energies* into action; the administration of the laws requires *energy* in the magistrate. It also signifies the momentum which any simple or compound body exhibits, by causes obvious or concealed.

ENERV'ATE, to deprive of nerve, force, or strength; as, idleness and luxury *enervate* both body and mind.

ENFEOFF'MENT, in law, the act of giving the fee simple of an estate.

ENFI'LED, in heraldry, an epithet implying that the head of a man, beast, or any other charge, is placed on the blade of a sword.

ENFILA'DE, in military tactics, is used in speaking of trenches, or other places, which may be seen and scoured by the enemy's shot along the whole length of a line.

ENFRAN'CHISEMENT, in law, the incorporating a person into any society or body politic; to admit to the privileges of a freeman.

ENGA'GEMENT, a word used in different senses. Any obligation by agreement or contract, is an *engagement* to perform, &c.; the conflict of armies or fleets is an *engagement*; and any occupation, or employment of the attention, is likewise called an *engagement*.

EN'GINE, in mechanics, a compound machine, consisting of one or more mechanical powers, as of levers, pullcys, &c. in order to raise, cast, or sustain any weighty body; or to perform some mechanical operation in which force and velocity are necessary. [The different kinds of engines are described in their respective places. See Steam-engine, &c.]

ENGINEER'. There are two kinds, military and civil. A *military engineer* is one who, by a perfect knowledge in mathematics, delineates upon paper, or marks upon the ground, forts, or other works proper for offence and defence. He should understand the art of fortification, so as to be able, not only to discover the defects of a place, but to find a remedy proper for them, as also how to attack as well as to defend. It is his business also to delineate the lines of circumvallation and contravallation, taking all the advantages of the ground; to mark out the trenches, places of arms, batteries, lodgments, &c.——*Civil engineers* are employed in delineating plans and superintending the construction of public works, as aqueducts, canals, bridges, rail-roads, &c.

EN'GISCOPE, in mechanics, an instrument or kind of microscope, for viewing small bodies more distinctly.

ENGISO'MA, in surgery, a fissure of the cranium. Also, a surgical instrument used in fractures of the cranium.

EN'GLISH, (pron. *Ing'glish*), the language spoken by the people of England, and their descendants in India, North America, and the British colonies. The ancient language of Britain is generally allowed to have been the same with that of the Gauls; this island, in all probability, having been first peopled from Gallia, as both Cæsar and Tacitus prove by many strong and conclusive arguments. Julius Cæsar, sometime before the birth of our Saviour, made a descent upon Britain, though he may be said rather to have discovered than conquered it: but, about the year 45, in the time of Claudius, Aulus Plautius was sent over with some Roman forces, by whom two kings of the Britons, Codigunus and Caractacus, were both signally defeated: whereupon a Roman colony was planted at Malden in Essex, and the southern parts of the island were reduced to the form of a Roman province. Britain was subsequently conquered as far north as the friths of Dumbarton and Edinburgh, by Agricola, in the time of Domitian; and a great number of the Britons, in the conquered part of the island retired to the western part, called Wales, where their language continued to be spoken without any foreign admixture. The greatest part of Britain being thus become a Roman province, the Roman legions, who resided in Britain for above two hundred years, undoubtedly disseminated the Latin tongue; and the people being afterwards governed by laws written in Latin, it must have necessarily followed that the language would undergo a considerable change. In fact, the British tongue continued, for some time, mixed with the provincial Latin; but at length, the declining state of the Roman empire rendered the aid of the Roman legions necessary at home, and on their abandoning the island, the Scots and Picts took the opportunity to attack and harass South Britain: upon

THERE ARE A HUNDRED ENGLISHMEN WHO SPEAK FRENCH TOLERABLY WELL, FOR ONE FRENCHMAN WHO CAN SPEAK GOOD ENGLISH.



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THE ENGLISH LANGUAGE IS MORE REMARKABLE FOR ITS STRENGTH AND EXPRESSIVENESS, THAN DISTINGUISHED FOR GRACE AND BEAUTY.

which, Vortigern, the king, about the year 440, called the Saxons to his assistance, who, coming over with several of their neighbouring tribes, repulsed the Scots and Picts, and were rewarded for their services with the isle of Thanet, and the whole county of Kent. Growing at length too powerful, and not being contented with their allotment, they dispossessed the inhabitants of all the country on the east side of the Severn; and thus the British language was in a great measure destroyed, and that of the Saxons introduced in lieu of it. What the Saxon tongue was long before the Conquest, viz. about the year 700, may be seen in the most ancient manuscript of that language, which is a gloss on the Evangelists, by bishop Eadfride, in which the three first articles of the Lord's prayer run thus: "Uren fader thic arth in heofnas, sic gehalgud thin noma, so symeth thin ric. Sic thin willa sue is heofnas, and in eortho, &c." In the beginning of the ninth century, the Danes invaded England, and getting a footing in the northern and eastern parts of the country, their power gradually increased, and in about two hundred years they became its sole masters. By this means the ancient English obtained a tincture of the Danish language: but their government, being of no long continuance, did not make so great an alteration in the Anglo-Saxon, as the next revolution, when the whole land, A.D. 1067, was subdued by William the Conqueror, duke of Normandy, in France: for the Normans, as a monument of their conquest, endeavoured to make their language as generally received as their commands: and thereby the English language became an entire medley. About the year 900, the Lord's prayer in the ancient Anglo-Saxon, read as follows: "Thu ure fader the eart on heofenum, si thin nama gehalgod; cume thin rice si thin willa on eorthan swa, swa on heofenum, &c." And, about the year 1160, pope Adrian, an Englishman, thus rendered it in rhyme:

"Ure fader in heaven rich,
Thy name be hayled ever lich,
Thou bring us thy michell blisse:
Als hit in heaven y-doe,
Evar in yearth beene it also, &c"

It continued to undergo various mutations, till the year 1537, when the Lord's prayer was thus printed: "O oure father which arte in heven, halowed be thy name: let thy kingdome come, thy will be fulfilled as well in erth as it is in heven; geve us this daye in dayly bred, &c." Here, it may be observed, the diction is brought almost to the present standard, the chief variations being only in the orthography. By these instances, and many others that might be given, it appears, that the Anglo-Saxon language, which the Normans in a great measure despoiled and rendered obsolete, had its beauties, was significant and emphatical, and preferable to what they substituted for it. "Great, verily," says Camden, "was the glory of our tongue, before the Norman Conquest, in this, that the old English could express, most aptly, all the conceptions of the mind in their own tongue, without borrowing from any." Of this he gives several examples. After the Conquest, it was ordained that all law proceedings should be in the Norman language; and hence the early records and reports of law cases came to be written in Norman. But neither royal authority, nor the influence of courts, could absolutely change the vernacular language. After an experiment of three hundred years, the law was repealed; and since that period, the English has been, for the most part, the official as well as the common language of the nation. Since the Norman invasion, the English has not suffered any shock from the intermixture of conquerors with the natives of England; but the language has undergone great alterations, by the disuse of a large portion of Saxon words, and the introduction of words from the Latin and Greek languages, with some French, Italian, and Spanish words. These words have, in some instances, been borrowed by authors directly from the Latin and Greek; but most of the Latin words have been received through the medium of the French and Italian. For terms in the sciences, authors have generally resorted to the Greek; and from this source, as discoveries in science demand new terms, the vocabulary of the English tongue is receiving continual augmentation. We have also a few words from the German and Swedish, mostly terms in mineralogy; and commerce has introduced new commodities of foreign growth or manufacture, with their foreign names, which now make a part of our language. It may then be stated, that the English is composed of, 1st, Saxon and Danish words of Teutonic and Gothic origin. 2nd, British or Welsh, which may be considered as of Celtic origin. 3rd, Norman, a mixture of French and Gothic. 4th, Latin. 5th, French. 6th, Greek. 7th, A few words directly from the Italian, Spanish, German, and other languages of the continent. 8th, A few foreign words, introduced by commerce, or by political or literary intercourse. Of these the Saxon words constitute our mother tongue. The Danish and Welsh also are primitive words, and may be considered as part of our vernacular language.

ENGRAVING, the art of producing, by the aid of an instrument called a graver, representations on hard surfaces of metal or wood, which, by means of ink and a printing-press, may be transferred to paper. For this purpose copper has generally been used, and is wrought or etched with a tool, and the lines completed with aqua fortis, or nitric acid. But latterly mixed metals, not subject to the corrosion of oil in printing, or steel, have been introduced: and engravings on wood have been revived with great effect, as may be seen in the "pictorial" editions of various works recently published. The art of engraving on copper was invented in Europe in the early part of the 15th century: but the Chinese

OUR LANGUAGE POSSESSES GREAT FLEXIBILITY, AND EMBRACES A VERY COPIOUS STOCK OF WORDS USED EXCLUSIVELY IN POETRY.



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ENGRAVING ON WOOD IS SUPPOSED TO HAVE BEEN INVENTED AT FLANDERS IN 1423, AND REVIVED BY THE CELEBRATED ALBERT DURER IN 1511.

seem to have been acquainted with it long before.——The art of *etching* was discovered some time after that of engraving. It consists in giving the representation of any object on a metal plate, on which a ground has been previously laid, capable of resisting the action of acids. After the plate has been covered with a proper varnish or ground, the ground is scored or scratched by a needle or similar instrument, in the places where the etchings or engravings are intended to be; the plate is then covered with diluted nitric acid which corrodes or eats the metal where it is thus laid bare. This is called *biting in*: the more distant and lighter places require the acid to be applied to them for a shorter time; and when it happens that any parts of the etching are wished darker, this can be accomplished by what is termed *re-biting*.

ENHARMON'IC, in music, an epithet applied to such species of composition as proceed on very small intervals, or smaller intervals than the diatonic and chromatic.

ENIG'MA, a dark or ambiguous saying, in which the true meaning is concealed under obscure language

ENNEAHE'DRIA, in natural history, a genus of columnar, crystaliform, and double-pointed spars, composed of a trigonal column, terminated at each end by a trigonal pyramid.

ENNEAN'DRIA, the name of the ninth class in Linnæus's sexual system, consisting of plants which have hermaphrodite flowers, with nine stamens.

ENNEAPET'ALOUS, in botany, having nine petals or flower-leaves.

ENNEAT'ICAL DAYS, are every ninth day of a disease.——*Enneatical years*, are every ninth year of a person's life.

ENNUI, *(French)*, a word expressive of lassitude, or weariness arising from the want of employment.

ENS, among metaphysicians, denotes entity, being, or existence: this the schools call *ens reale*, and *ens positivum*, to distinguish it from their *ens rationis*, which exists only in the imagination.——*Ens*, among chemists, signifies the essence or virtue of any substance.

EN'SIFORM, an epithet for that which resembles a sword, *(ensis)*; as an *ensiform* leaf.

EN'SIGN, the flag or banner under which soldiers are ranged, according to the different regiments to which they belong.——*Ensign* is also the officer that carries the colours, being the lowest commissioned officer in a company of infantry.——*Naval ensign*, is a large banner hoisted on a staff, and carried over the poop or stern of a ship.

ENSA'TÆ, the sixth Linnæan natural order of plants, containing the liliaceous plants, as the saffron, iris, &c.

ENSEM'BLE, *(French)*, a term used in the fine arts to denote the general effect of a whole work, without reference to the parts. The *ensemble* of a picture, for instance, may be satisfactory to the eye of the spectator, though the several parts may not bear a critical analysis; or, in a drama, the characters may be well drawn, and yet it may be deficient in the *ensemble*, that is, as a whole.

ENTAB'LATURE, in architecture, the architrave, frieze, and cornice, at the top of a column, and which is over the capital; the horizontal continuous work which rests upon a row of columns.

ENTAIL', in law, an estate entailed, abridged and limited by certain conditions prescribed by the first donor. Estates tail are either *general* or *special*; and are always less estates than a fee simple.——*To entail*, is to settle the descent of lands and tenements, by gift to a man and to certain heirs specified, so that neither the donee nor any subsequent possessor can alienate or bequeath it.

ENTA'LIA, in natural history, shells or coverings for sea-worms.

ENTE, in heraldry, an epithet signifying grafted or engrafted.

ENTERITIS, in medicine, inflammation of the intestines; a disorder always attended with considerable danger, and consequently requiring immediate attention.

ENTEROCELE, in surgery, a rupture of the intestines.

ENTEROL'OGY, a treatise or discourse on the internal parts of the body.

ENTEROM'PHALOS, an umbilical or navel rupture.

ENTERTAIN'MENT, the pleasure which the mind receives from any thing interesting, and which arrests the attention. Also, the hospitable reception of, and amusement we provide for, our guests.——In a dramatic sense, the farce or pantomime which follows a tragedy or comedy.

ENTHU'SIASM, in a religious sense, implies a transport of the mind, whereby a person vainly fancies himself inspired with some revelation from heaven, or that his actions are governed by a divine impulse. Devotion, when it does not lie under the check of reason, is apt to degenerate into enthusiasm; and when once it fancies itself under the influence of a divine impulse, it is no wonder that it should slight human ordinances, and trust to the conceits of an overweening imagination. But enthusiasm, in another sense, when under the controul of reason and experience, becomes a noble passion, that forms sublime ideas, and prompts to the ardent pursuit of laudable objects. Such is the enthusiasm of the poet, the orator, the painter, and the sculptor—such is the enthusiasm of the patriot, the hero, the philanthropist, and the truly devout Christian.

EN'THYMEME, among logicians, denotes a syllogism, perfect in the mind, but imperfect in the expression.

ENTI'ERTIE, or ENTI'RETY, in law, the whole of a thing, in distinction from a moiety: thus a bond, damages, &c., are said to be *entire*, when they cannot be apportioned.

ENTOMOLI'THUS, in mineralogy, an insect, or any part of one, changed into a fossil.

IN THE FRENCH ARMY, UNDER NAPOLEON, THE OLDEST AND MOST DISTINGUISHED SERGEANTS ACTED AS ENSIGNS, AND BORE THE COLOURS.



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ENTOMOL'OGY, that branch of zoology which treats of the orders, genera, species, varieties, structure, and habits, of insects. Like all other organized bodies, insects are composed of fluids and solids. In the four superior classes of animals, viz. mammalia, birds, reptiles, and fishes, the bones form the most solid part, and occupy the interior part both of the trunk and limbs. This is reversed in insects; the exterior part is the most solid, serving at the same time both for skin and bones. Whether insects be endowed with any senses different from those of the superior animals, cannot easily be ascertained. It appears evident that they possess vision, hearing, smell, and touch; and there are few things, either in the vegetable or animal kingdom, which are not consumed by some of them. The general characters by which insects are distinguished are the following:—they are furnished with several (six or more) feet; the muscles are affixed to the internal surface of the skin, which is a substance more or less strong, and sometimes very hard and horny; they do not breathe like larger animals, by lungs or gills situated in the upper part of the body; but by a sort of spiracles, distributed in a series or row on each side the whole length of the abdomen; these are supposed to communicate with a continued chain, as it were, of lungs, or something analogous to them, distributed throughout the whole length of the body; the head is furnished with a pair of what are termed antennæ, or horns, which are extremely different in different tribes, and which, by their structure, &c. form a leading character in the institution of the genera into which insects are divided. The sting, which is peculiar to insects of the bee tribe and some few others, is sometimes simple, having but one dart, and sometimes compound, having two darts. In bees and wasps the sting is retractile, that is, capable of being drawn in; but in other insects it is almost always hid in the body, or seldom thrust out. In some tribes of insects it exists in the males, in others in the females only, but seldom in both sexes.——Writers on natural history formerly included snails, worms, and the smaller animals, or animalcules, in general, among insects: these are now more properly placed among the tribe *vermes*, or worm-like animals. Insects have also been denominated bloodless animals, which modern discoveries have shown to be contrary to fact: some of them have been frequently viewed with the microscope, to exhibit in a striking manner the circulation of the blood. In *cimex lectularius*, for instance, the vibrations and contractions of the arteries may be distinctly observed.—— Most insects are oviparous; and as many of them cannot transport themselves easily, in quest of food, to places at a distance from one another, nature has furnished the perfect insects of many species with an instinct, which leads them to deposit their eggs in situations where the larvæ, as soon as hatched, may find that kind of food which is best adapted to their nature. Most of the butterflies, though they flutter about, and collect the nectareous juice of a variety of flowers, as food for themselves, always deposit their eggs on or near to those vegetables which are destined by nature to become the food of their larvæ. The eggs of insects are of two sorts; the first membranaceous, like the eggs of the tortoise and the other reptiles: the other covered with a shell, like those of the birds. Their figure varies exceedingly; some are round, some elliptical, some lenticular, some cylindrical, some pyramidal, some flat, some square; but the round and oval are the most common. The life of insects varies as to its duration. Some, as bees and spiders, are supposed to live for a considerable time; but others will not live beyond a year, a day, or some hours, in their perfect state, although they will continue for some time in their larva state.——In 1735, the system of Linnæus was published, It consisted at first of four orders, which he afterwards increased to seven, classing them according to their wings; viz. 1, *Coleoptera*, or such as have shells that cover the wings, as the beetle tribe. 2, *Hemiptera*, or half-winged insects, as the locust, grasshopper, &c. 3, *Lepidoptera*, or scaly winged insects, as the butterfly and the moth. 4, *Neuroptera*, or nerve-winged or fibre-winged insects, as the dragon fly, trout fly, &c. 5, *Hymenoptera*, or insects with four wings and a sting, as the bee, wasp, hornet, white ant, &c. 6, *Diptera*, or two-winged insects, as the gnat, common fly, musquito, &c. 7, *Apters*, or insects without wings, as the spider, flea, lobster, &c.—Cuvier's later classification is much more extensive.——Insects afford nourishment to a great number of the superior animals; many of the fishes, reptiles, and birds, draw the principal part of their sustenance from that source; nay, some of them form part of the food of man. Besides, by consuming decayed animal and vegetable matter, which, if left to undergo the putrefactive process on the surface of the ground, might taint the atmosphere with pestilential vapours, preserve the air pure for the respiration of man and other animals. On the other hand, the injuries they inflict upon us are extensive and complicated; and the remedies which we attempt are often aggravations of the evil; because they are directed by an ignorance of the economy of nature. There are beetles which deposit their larvæ in trees, in such formidable numbers, that whole forests perish beyond the power of remedy. At one place in South Carolina, at least 90 trees in every 100, upon a tract of 2000 acres, were swept away by a small black winged bug. Wilson, the American ornithologist, speaking of the labours of the ivory-billed woodpecker, says, "Would it be believed that the larvæ of an insect, or fly, no larger than a grain of rice, should, silently, and in one season, destroy some thousand acres of pine trees, many of them two or three feet in diameter, and 150 feet

INSECTS ARE DESTITUTE OF VOICE, AND HAVE NO DISTINCT HEARING; AND INCUBATION IS NOT NECESSARY FOR HATCHING THEIR EGGS.

HIPPOCRATES WROTE UPON INSECTS ABOUT 500 YEARS BEFORE THE CHRISTIAN ERA. ARISTOTLE AND PLINY ALSO MADE THEM THEIR STUDY.



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high? In some places the whole woods, as far as you can see around you, are dead, stripped of the bark, their wintry-looking arms and bare trunks bleaching in the sun, and tumbling in ruins before every blast." The corn-weevil, which extracts the flour from grain, leaving the husk behind, will destroy the contents of the largest storehouses in a very short period. The wire-worm and turnip fly are dreaded by every farmer. The ravages of the locust present a frightful example of the formidable collective power of the insect race; and the white ants of tropical countries sweep away whole villages with as much certainty as a fire or an inundation.

ENTRE'METS, *(French)*, small plates, or dainties, set between the principal dishes at table.——In music, the inferior and lesser movements inserted in a composition between those of more importance.

ENTREPA'S, in horsemanship, a short broken pace, nearly resembling an amble.

ENTREPO'T, *(French)*, a warehouse or magazine for the deposit of goods.

ENTRICHO'MA, in anatomy, the outer extremity or edge of the eyelid.

EN'TROCHITE, a kind of fossil, usually about an inch long, and made up of round joints, which, when separated, are called *trochites*. They are striated from the centre to the outside, have a cavity in the middle, and seem to be composed of the same substance as the fossil shells of the echini.

EN'TRY, in law, the act of taking possession of lands.——In commerce, the act of setting down in an account-book the particulars of trade; as make an *entry* of that sale, debt, or credit. Bookkeeping is performed either by *single* or *double entry*.—— *Entry*, at the custom-house, the exhibition or depositing of a ship's papers in the hands of the proper officers, and obtaining permission to land the goods.

ENU'CLEATE, to open as a nucleus; to clear from knots or lumps; hence, to explain, or clear from obscurity.

EN'ULON, in anatomy, the internal flesh of the gums, or that part of them which is within the mouth.

ENUMERA'TION, an account of several things, in which mention is made of every particular article.——*Enumeration*, in rhetoric, is that part of a peroration in which the orator recapitulates the principal points or heads of the discourse or argument.

ENURE'SIS, in medicine, an involuntary flow or incontinency of urine.

ENUR'NEY, in heraldry, an epithet for a bordure charged with wild beasts.

ENVELO'PE, the cover that encloses a letter or note.——In fortification, a small rampart of earth, with a parapet.

ENVIRONNE', in heraldry, signifies surrounded with other things: thus, they say, a lion *environne* with so many besants.

EN'VIRONS, the parts or places which surround another place; as the *environs* of a city or large town

EN'VOY, a person deputed by government to negotiate some affair with any foreign prince or state. There are envoys *ordinary* and *extraordinary*, as well as ambassadors; they are equally the same under the protection of the law of nations, and enjoy all the privileges of ambassadors, but, being in rank below them, they are not treated with equal ceremony. The word *envoy* is also sometimes applied to resident ministers.

EN'VY, a feeling that springs from pride or disappointed ambition, excited by the sight of another's superiority or success, accompanied with some degree of malignity, and usually with a desire to depreciate him.

EPA'GOGE, in rhetoric, a figure of speech, which consists in demonstrating and proving universal propositions by particulars.

EPANADIPLO'SIS, in rhetoric, a figure of speech which begins and ends with the same words.——In medicine, the return of a cold fit, in a semi-tertian fever, before the hot fit is ended.

EPANALEP'SIS, a figure of speech, in which the same word is repeated by way of emphasis.——In medicine, a restoration to life.

EPAN'ODOS, in rhetoric, a figure in which the same or similar words are used in two or more sentences.

EPANORTHO'SIS, in rhetoric, the act of changing weak or faint expressions, for those which are more energetic.

EPAPHÆ'RESIS, in medicine, a removal or taking away; applied particularly to repeated phlebotomy.

EPARI'TA, in mineralogy, a sort of liver-coloured argillaceous earth.

EPAR'SIS, in medicine, a tumour, more particularly of the parotid glands.

E'PHAH, or E'PHA, in Hebrew antiquity, a measure both for liquids and dry goods.

E'PACTS, in chronology, the excesses of the solar month above the lunar synodical month, and of the solar year above the lunar year of twelve synodical months. The epacts, then, are either *annual* or *menstrual*. Suppose the new moon to be on the 1st of January: since the lunar month is 29 days, 12 hours, 44 minutes, 3 seconds, and the month of January contains 31 days; the menstrual epact is 1 day, 11 hours, 16 minutes, 57 seconds. The annual epact is nearly 11 days; the Julian solar year being 365 days, 6 hours; and the Julian lunar year 354 days, 8 hours, 48 minutes, 38 seconds.

EP'ARCHY, the prefecture or territory under the jurisdiction of an *eparch* or governor.

EPAU'LE, in fortification, the shoulder of the bastion, or the angle of the face and flank; which is often called the *angle of the epaule*.

EPAU'LEMENT, in fortification, a work raised to cover sidewise, made of earth, gabions, &c. It also denotes a mass of earth, called a square orillon, raised to cover the cannon of a casemate, and faced with a wall.

EPAULETTE, or EPAULET, an ornamental badge worn on the shoulder by military and naval officers. In the English

EPAULETTES ORIGINATED IN THE TIME OF LOUIS XIV. FROM THE RIBAND BY WHICH THE SWORD-BELT WAS KEPT FAST ON THE SHOULDER.

"ENVY, TO WHICH THE IGNOBLE MIND'S A SLAVE, IS EMULATION IN THE LEARN'D OR BRAVE."—SO SAYS ALEXANDER POPE.



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army, all officers now wear two epaulettes; the bullion, in those of field-officers and captains, are distinguished by being much thicker. The epaulettes of a colonel have a silver star, surmounted by a crown on the strap; those of a lieutenant-colonel have a crown, while those of a major are distinguished by a star.——In the navy, masters and commanders have one epaulette on the left shoulder; post-captains, under three years, one epaulette on the right shoulder, afterwards two epaulettes: rear-admirals have one star on the strap of the epaulette, vice-admirals two stars, and admirals three stars.

EPEN'THESIS, the insertion of a letter or syllable in the middle of a word, as, *alitum* for *altum*.

EPHE'BIA, in antiquity, puberty, or the age of fifteen.

EPHE'DRA, in botany, a genus of plants in the Linnæan system, class 22 *Dioecia*, order 12 *Monodelphia*.

EPHE'LIS, in medicine, a broad solitary or aggregated spot, on the face, back of the hand, or breast, arising from exposure to the sun.

EPHEM'ERA, the DAY-FLY; a genus of flies belonging to the order *Neuroptera*, and so called from their living only one day and a night; they have two gibbous protuberances on the top of the head, resembling eyes; the tail is furnished with hairs, and the attennæ are short. To this genus belong a variety of species, differing from each other in the length of their lives; some living but a few hours, and others several days. From the short duration of the existence of these insects, the term *ephemeral* has been derived, which is used to signify anything short-lived or temporary. The ephemeræ live but a few hours after becoming perfect insects, appearing generally a short time before sunset, and rising and descending like gnats, in immense swarms. They emerge from the chrysalis, on the banks of a stream, and make their exit from the envelope or case. When at rest, these insects preserve the wings in a vertical position, and are so found, in a semi-torpid state, a short time previous to their death. In the larva state they are said to live a year, and in that of the chrysalis or pupa, two years.

EPHEM'ERIS, (plu. *ephemerides)*, in astronomy, a table or collection of tables, showing the daily state of the heavens, or the places wherein all the planets are to be found every day at noon. It is from these tables that the eclipses, conjunctions, and aspects of the planets are calculated and determined.——In medicine, *ephemerides* are those diseases which return at particular times of the moon.

EPHIAL'TES, in medicine, incubus, or the night-mare.

EPHIDRO'SIS, in medicine, a violent and morbid perspiration.

EPH'OD, an ornament or upper garment worn by the *Jewish* priests. It was a sort of girdle, which being brought from behind the neck and over the two shoulders, and hanging down before, was put across the stomach, then carried round the waist, and used as a girdle to the tunic.

E'PHODOS, in medicine, the ducts or passages by which the excrements are evacuated.

EPH'ORI, in Grecian antiquity, magistrates established in ancient Sparta to balance the regal power. The authority of the *ephori* was very great: they were five in number, presided over shows and festivals, had the care of the public money, specially superintended the education of youth, and were the arbiters of war and peace.

EPIALOS, in medicine, an ardent fever, in which both heat and cold are felt at the same time.

EPIC, or *heroic poem*, a poem narrating a story, partly real and partly feigned; representing, in a sublime style, some signal and fortunate action; distinguished by a variety of great events; and intended to form the morals and affect the mind with the love of virtue. The *epic* may treat very different subjects; grave and elevated, like Dante's and Milton's poems; glowing and romantic, like Ariosto's; or cheerful and ludicrous: it affords, indeed, a wide range, from the sublimity of Paradise Lost to the wit of Hudibras. The great epic writers of antiquity are Homer and Virgil: among the moderns, Milton, Tasso, Camoens, Dante, and Ariosto; besides many English poets of our own day, whose claims to the honour are indisputable.

EPICAN'THIS, in anatomy, the angle of the eye.

EPICAR'PIUM, a topical medicine applied to the wrist.

EPICENE, in grammar, an epithet for the gender of such words as are common to both sexes.

EPICERAS'TICA, medicines which by mixing with acrimonious juices, temper them and render them less troublesome.

EPICHIRE'MA, in logic, a mode of reasoning, which comprehends the proof of one or both the premises of a syllogism, before the conclusion is drawn.

EPICTE'TIAN, pertaining to Epictetus, the Stoic philosopher; a man who was held in such high esteem, that it is said his study lamp was sold after his death for three thousand drachmas.

EPICHIROTO'NIA, in Grecian antiquity, the annual ceremony of revising the laws, which was instituted by Solon. They gave their votes by holding up their hands: hence the name.

EPICITHARIS'MA, in the ancient drama, the last part of the interlude, or a flourish of music after the play was over.

EPICRA'NIUM, in anatomy, the common integuments, aponeurosis, and muscular expansion which lie upon the cranium.

EPICURE'ANS, a numerous sect of philosophers in Greece and Rome: the disciples of *Epicurus*, who flourished about 300 years B.C. They maintained that sensual pleasure was man's chief felicity; that the world was formed by a concourse of atoms, and not governed by Providence; that the



REMEMBER BEES IN SUCH QUANTITIES IN CARNIOLA, THAT THEY ARE COLLECTED, AND USED AS MANURE FOR THE LAND.

RICHTER SAYS, "THE EPIC POET MAY FLY FROM REGION TO REGION BETWEEN HEAVEN AND HELL, BUT HE MUST DESCRIBE HIS WAY."

gods resided in the extramundane spaces, in soft, inactive ease, and eternal tranquillity; that future rewards and punishments were idle chimeras; and that the soul was extinguished with the body. They are mentioned in the xviith chapter of the Acts of the Apostles. *Epicurus* himself maintained a more manly philosophy than the generality of his followers; he held, indeed, that pleasure was the chief end of human pursuit; and this pleasure he placed in an exemption from pain, and a perfect tranquillity of body and mind; but the means which he pointed out as conducive to this end were prudence, temperance, fortitude, and justice, in the union of which perfect happiness consists. He pursued pleasure, therefore, in its most rational acceptation, and his life seems to have been stained with few vices. The precepts and practices of the *Epicureans* have, however, loaded his memory with unmerited infamy; and an Epicurean, according to the perverted meaning of his doctrine, is one who is devoted to sensual enjoyments, particularly those of the table.

EPICYCLE, in the ancient astronomy, a little circle whose centre is in the circumference of a greater circle.

EPICYCLOID, in geometry, is a curve generated by a point in one circle, which revolves about another circle, either on the concavity or convexity of its circumference, and thus differs from the common cycloid, which is generated by the revolution of a circle along a right line.

EPIDEMIA, in Grecian antiquity, festivals kept in honour of Apollo and Diana, at the stated seasons when these deities, who could not be present everywhere, were supposed to visit different places, in order to receive the vows of their adorers.

EPIDEMIC, a disease which prevails in a place or tract of country only for a temporary period, or that attacks many people at the same season. There are some epidemics which prevail every year, and which are produced by the various changes of the seasons. Thus, the spring is accompanied by inflammatory diseases; summer by complaints in the stomach and bowels; autumn by catarrhs; and winter by intermittents. An epidemic at its commencement is usually mild, and becomes more dangerous as it spreads; but as it goes off, it again generally assumes a mild form. Epidemics are not originally contagious; it is only under particular circumstances, especially if the disorder is a violent one, and many patients are crowded into a small room, so as to form a corrupt atmosphere about the sick, that contagion takes place. That which is frequently ascribed to contagion, is only the consequence of a violent shock of the nervous system at the sight of a sick person, perhaps in a loathsome state, whereby the disease, to which the body was already disposed, is more quickly developed.

EPIDENDRA, in botany, a term sometimes used for the parasitical plants, or those which grow on trees, shrubs, and other vegetables; as the mistletoe, dodder, &c.

EPIDENDRIUM, a genus of perennial plants, class 20 *Gynandria*, order 1 *Diandria*.

EPIDERMIS, in anatomy, the cuticle or scarf skin; a thin membrane covering the skin of animals, or the bark of plants.

EPIDOTE, a mineral, found crystallized in rhombic prisms variously modified, both laterally and at its extremities. Its colour is usually some shade of green; and it has two varieties, the *zoisite* and *manganesian epidote*. Magnificent crystals of it, two or three inches in length, and between one and two in diameter, are found at Arendal, in Norway, and are hence called *Arendalite*; but they are not much esteemed in jewellery.

EPIGASTRIC, pertaining to the upper part of the abdomen. —— *Epigastric vessels*, the arteries and veins belonging to the *epigastric region*; the former being branches of the coeliac artery, and the latter of the iliac veins.

EPIGLOTTIS, in anatomy, one of the cartilages of the larynx, whose use is to cover the glottis when food or drink is passing into the stomach, to prevent it from entering into the larynx and obstructing the breath.

EPIGRAM, a short poem or composition in verse, treating only of one thing, and ending with some lively, ingenious, and natural thought or point. Boileau says, the finesse and subtilty of the epigram should turn upon the words, rather than the thoughts, by which means he reduces it to the nature of a pun, or equivoque. From its concise and expressive character, it is well fitted for satire; but an epigram may be didactic, satiric, comic, lyric, or elegiac.——Originally, epigrams were inscriptions on tombs, statues, temples, triumphal arches, &c.

EPILEPSY, a disease of the medullary system, which deprives the afflicted of sensation and volition, accompanied by involuntary contraction of the muscles. It was formerly called the falling sickness, because those who were attacked by it fell suddenly to the ground.

EPILOBIUM, in botany, Willow-herb, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species are perennials.

EPILOGUE, in the drama, a speech addressed to the audience when the play is ended. In the modern tragedy the epilogue is usually smart and lively, intended, probably, to compose the passions raised in the course of the representation; but it has been compared to a merry jig upon the organ, after a good sermon, to wipe away any impressions that might have been made by it, and send the congregation away just as they came.——In rhetoric, the conclusion of a speech, containing a recapitulation of the whole.

EPINICION, in the Greek and Latin poetry, is a poem or composition celebrating a victory. Also, a festival on account of a victory.



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EPIPH'ANY, a Christian festival, observed on the sixth of January (the twelfth day after Christmas), in honour of the appearance of our Saviour to the magi, or wise men, who came to adore him, and bring him presents. The Greek fathers use the word for the appearance of Christ in the world, the sense in which St. Paul uses the word, 2 Tim. i. 10. On the evening of this day plum cakes are divided in family parties, by drawing lots for imaginary characters; an old custom continued for its good cheer and merriment.

EPIPHILE'BOS, in medicine, an epithet for one whose veins appear prominent.

EPIPHONE'MA, in rhetoric, a sententious exclamation or remark, not closely connected with the general tenor of the oration, and generally expressed with vehemence.

EPIPH'ORA, in medicine, a preternatural defluxion of the eyes; a disease in which the tears, from increased secretion, or other causes, accumulate in front of the eye, and trickle over the cheek.

EPIPHYLLOSPER'MOUS, in botany, an epithet for plants which bear their seeds on the back of the leaves, as ferns.

EPIPHY'SIS, in anatomy, a bony substance, or as it were a lesser bone, affixed to a larger or principal bone, by a cartilage. In young subjects these epiphyses are not continuous to the principal bone, but are only connected by the intermediate cartilage; hence they are called appendages to the bones.

EPIPLEX'IS, a rhetorical figure, which, by an elegant kind of upbraiding, endeavours to convince.

EPIP'LOCE, a rhetorical figure, by which one aggravation, or striking circumstance, is added to another; as, "He not only spared the rebels, but encouraged them; not only encouraged them, but rewarded them."

EPIP'LOCELE, in surgery, a rupture of the caul or omentum.

EPIPLOON', in anatomy, the omentum or caul.

EPIS'COPACY, a form of church government by diocesan bishops.

EPISCOPA'LIANS, an appellation given to those who adhere to the episcopal form of church government and discipline. Until the test act was repealed, none but episcopalians, or members of the Church of England, were qualified to fill any office, civil or military.

EP'ISODE, in poetry, a separate incident, story, or action, which a poet invents, and connects with his principal action, that his work may abound with a greater variety of events: though, in a more limited sense, all the particular incidents of which the action or narration is compounded, are called episodes. In epic poetry, there is much more room for the episode than in dramatic, where the poem is confined to a present action. The term *episode* has also been transferred to historical painting, in a sense analogous to that which it bears in poetry.

EPISPAS'MOS, in medicine, a quick inspiration of the breath.

EPISPAS'TIC, in medicine, signifies a blister; or a topical remedy applied for attracting the humours of the skin.

EPISTAX'IS, in medicine, a repeated bleeding of the nose.

EPIS'TLE, a letter, or letter missive, communicating intelligence to a distant person. It is rarely used in familiar writings, but in those which are solemn and formal; as the epistles of St. Paul, the epistles of Cicero, Pliny, &c. The epistles of St. Paul, which are fourteen in number, make part of the canon of the New Testament; besides which there in one general epistle of St. James, two of St. Peter, three of St. John, and one of St. Jude.

EPISTOLOG'RAPHY, the art or practice of writing letters.

EPIS'TROPHE, in rhetoric, a figure of speech in which several successive sentences end with the same word or affirmation, as, "Are they Hebrews? so am I. Are they Israelites? so am I. Are they of the seed of Abraham? so am I," &c.

EP'ISTYLE, in ancient architecture, a term used by the Greeks for what we call the *architrave, viz.* a massive piece of stone or wood laid immediately over the capital of a column.

EP'ITAPH, a monumental inscription in honour or memory of a deceased person; or an inscription engraven or cut on a tomb, to mark the time of a person's decease, his name, and family; usually with some eulogium of his virtues or heroic deeds. The *Romans* inscribed their epitaphs to the *manes, diis manibus*, and frequently introduced the dead as speaking to the living. Sometimes they were full of moral sentiments, and adorned with carved work. The epitaphs of the present day are too often replete with fulsome compliments and expressions of respect which, not being deserved, were never paid in the lifetime of the deceased. The Germans have a most expressive proverb, "He lies like a tombstone, and is as impudent as a newspaper." Whatever the merits of the party might have been,—whether he illuminated the world of science by his discoveries, or advanced the interests of his country, while he adorned his own brow with victorious laurels, or whether by his benevolence he administered to the comforts of his fellow-creatures,—no long panegyric should mar the simplicity of his epitaph: it should be modest, brief, and unaffected.

EPITA'SIS, in ancient poetry, the second part or division of a dramatic poem, in which the plot, entered upon in the first part, or *protasis*, was carried on, heightened, and worked up, till it arrived at its height, called *catastasis*.——In medicine, an increase of the paroxysm of a fever.——In rhetoric, that part of an oration in which the orator addresses himself most forcibly to the passions.

EPITHALA'MIUM, a nuptial song, or poetical composition in praise of the bridegroom and bride, with wishes for their

WITH THE BEST POETS, THE EPISODE IS NOT AN UNNECESSARY APPENDAGE, BUT HELPS TO DEVELOPE THE GENERAL PLOT.

"NATURE AND NATURE'S LAW LAY HID IN NIGHT; GOD SAID 'LET NEWTON BE'—AND ALL WAS LIGHT."—POPE'S EPITAPH ON SIR I. NEWTON.



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prosperity. Among the Greeks and Romans, it was sung by young men and maids at the door of the bridal chamber.

EPITHEM, in medicine, any external application used as a fomentation.

EPITHET, an adjective expressing some real quality of the thing to which it is applied. We have frequent occasion for the use of the word *epithet* in this work, (in defining botanical and other scientific terms,) which those who consult our pages cannot fail to notice.

EPITOME, a brief summary or compendium, containing the substance or principal matters of a book.——*To epitomize*, therefore, is to shorten a literary production by judicious abridgment.

EPITROPE, or EPITROPY, in rhetoric, a figure of speech, by which one thing is granted, with a view to obtain an advantage; as "I concede the fact, but this very concession overthrows your own argument."

EPIZEUX'IS, in rhetoric, a figure which repeats the same word, without any other intervening: such is that of Virgil, "nunc, nunc, insurgite remis."

EPIZOOT'IC, in geology, an epithet given to such mountains as contain petrifactions of animal remains, or the impressions of animal substances.

EPIZOO'TY, a pestilence among brutes.

E'POCH, a certain fixed period, or point of time, made famous by some remarkable event, and serving as a standard in chronology and history. The principal of these are the Creation, 4004 B.C.; the Flood, 2348 B.C.; the birth of Abraham, 1996 B.C.; the conquest of Canaan, 1451 B.C.: the taking of Troy, 1184 B.C.; the finishing of Solomon's Temple, 1104 B.C.; the first Olympiad, 776 B.C.; the building of Rome, 753 B.C.; the era of Nabonassar, 747 B.C.; the founding of the Persian Empire, by Cyrus, 559 B.C.; the death of Alexander, 323 B.C. the death of Cæsar, 44 B.C.: the birth of Christ, 1, or the commencement of the Christian era; the Hegira of Mahomet, 622 A.D.——The Christian era used by almost all Christian nations, dates from January 1st, the middle of the fourth year of the 194th Olympiad, in the 753d of the building of Rome, and 4714th of the Julian period. The Christian year, in its division, follows exactly the Roman year, consisting of 365 days for three successive years, and of 366 in the fourth year, which is termed *leap* year. The simplicity of this form has brought it into very general use, and it is customary for astronomers and chronologists, in treating of ancient time, to date back in the same order from its commencement. The Christian year (or Julian year), arranged as we have shewn, was 11' 11" too long, amounting to a day in nearly 129 years; and, towards the end of the 16th century, the time of celebrating the church festivals had advanced ten days beyond the periods fixed by the Council of Nice, in 325. It was in consequence ordered, by a bull of Gregory XIII., that the year 1582 should consist of 355 days only, which was effected by omitting ten days in the month of October, viz. from the 5th to the 14th; and, to prevent the occurrence of a like irregularity, it was also ordered, that, in three centuries out of four, the last year should be a common year instead of a leap year, as it would have been by the Julian calendar. The year 1600 remained a leap year, but 1700, 1800, and 1900, were to be common years. This amended mode of computing was called the *new style*, and was immediately adopted in all Roman Catholic countries, while the *old style* continued to be employed by Protestants. In 1700, however, the Protestants of Germany commenced with the new style; and in 1752 it was adopted in England, by omitting eleven days, to which the difference between the styles then amounted. The Russians continued to use the old style till the year 1830, when they followed the example of the other nations of Europe.

EPODE, in lyric poetry, the third or last part of the ode, the ancient ode being divided into strophe, antistrophe, and epode. The word is now used for any little verse or verses, that follow one or more great ones.

EPOPEE', or EPOPŒ'IA, in poetry, the fable, or subject of an epic poem.

EPOTIDES, in the naval architecture of the ancients, two thick blocks of wood, one on each side the prow of a galley, for warding off the blows of the rostra of the enemy's vessels.

EPOPTÆ, in antiquity, a name given to those who were admitted to view the secrets of the greater mysteries, or religious ceremonies of the Greeks.

EPROUVETTE, the name of an instrument for ascertaining the strength of dried gunpowder, or of comparing the strength of different kinds of gunpowder.

EPSOM SALTS, in chemistry, sulphate of magnesia, which was formerly procured by boiling down the mineral water from the spring at Epsom, but is now prepared from sea water. Its component parts are water, sulphuric acid and magnesia, and it is used as a cathartic.

EPULONES, in Roman antiquity, public officers who assisted at the sacrifices, and had the care of the *epulum*, or sacred banquet, committed to them.

EPULOT'IC, in medicine, an application for cicatrising and healing wounds or ulcers, or to dispose the parts to recover soundness.

E'QUABLE, an epithet for uniform motion, &c.; or that which is neither accelerated nor retarded.

EQUAL'ITY, a term of relation between things the same in magnitude, quantity, or quality. Also, the same degree of dignity or claims; as, the *equality* of men, in the scale of being: an *equality* of rights, &c.

EQUANIM'ITY, that even and calm frame of mind and temper, under good or bad fortune, which is not easily elated or depressed. A truly great man bears misfortunes with *equanimity*, and carries himself in prosperity without vain exultation or excessive joy.

EQUATION, in algebra, that disposi-



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tion of quantities, by which one set is made equal to another; or in which two quantities, equal in value, but differently represented, are put equal to each other by means of the sign of equality; as, $3x.-36d.$, or $x=b+m-r$.——*Equation of payments*, in arithmetic, a rule for finding a time when if a sum be paid which is equal to the sum of several others due at different times, no loss will be sustained by either party.——*Equation*, in astronomy, a term used to express the quantity added to, or subtracted from, the mean position of a heavenly body to obtain the true position.——*Equation of time*, denotes the reduction of the apparent time or motion of the sun, to equable, mean, or true time. The difference between true and apparent time arises from two causes, the eccentricity of the earth's orbit, and the obliquity of the ecliptic.

EQUATOR, in astronomy and geography, a great circle of the terrestrial globe, equidistant from its poles, and dividing it into two equal hemispheres; one north and the other south. It is called *equator*, because when the sun is in it, the days and nights are of *equal* length; hence it is called also the *equinoctial*, and when drawn on maps and globes, it is called the *equinoctial line*, or by mariners simply *the line*. All places which are on it have invariably equal days and nights. It crosses the centre of Africa, the islands of Sumatra, Borneo, Celebes, &c., in Asia, then traverses the Pacific Ocean, and crosses South America, in Columbia, thence proceeds through the Atlantic back to Africa.——To *cross the line*, in navigation, is to pass over the equator.

EQUERRY, an officer of state under the master of the horse. There are five equerries, who ride out with her majesty; for which purpose they give their attendance monthly, one at a time, and have a table provided for them.

EQUES AURATUS, a Roman knight, so called because none but knights were allowed to gild their armour.

EQUESTRIA, a place in the Roman theatres where the knights or *equites* sat.

EQUESTRIAN GAMES, in Roman antiquity, *(ludi equestres)*, horse-races, of which there were five kinds; the *prodromus* or plain horse-race, the chariot race, the decursory race about funeral piles, the *ludi sevirales*, and the *ludi septunales*.——*Equestrian order*, the second rank in Rome, next to the senators.——*Equestrian statue*, the representation of a person on horseback.

EQUIAN'GULAR, in geometry, an epithet given to figures, whose angles are all equal: as a square, an equilateral triangle, a parallelogram, &c.

EQUICRU'RAL, in geometry, having equal legs, but longer than the base; as, an *equicrural triangle*.

EQUIDIF'FERENT, in mathematics, an epithet for such things as have equal differences, or are arithmetically proportional.——In crystalography, having a different number of faces presented by the prism and by each summit; and these three numbers form a series in arithmetical progression, as 6, 4, 2.

EQUILA'TERAL, in geometry, having all the sides equal; as an *equilateral triangle*.

EQUILI'BRIST, one who keeps his balance in unnatural positions and hazardous movements; entertaining the spectator by his skilful motions and varying attitudes. In the East they are very common, and their feats are truly surprising.

EQUILI'BRIUM, in mechanics, equipoise, or equality of weight: the state of the two ends of a lever or balance when they are charged with an equal weight, and hang exactly even and level, in a position parallel to the horizon.

EQUIMULTIPLE, in arithmetic and geometry, a number multiplied by the same number or quantity. Hence *equimultiples* are always in the same ratio to each other, as the simple numbers or quantities before multiplication. Thus if 2 and 3 are multiplied by 4, the multiples, 8 and 12, will be to each other as 2 and 3.

EQUINOC'TIAL, in astronomy, a great circle of the sphere, under which the equator moves in its diurnal course. It is so called, because whenever the sun comes to this circle, the days and nights are equal all over the globe; being the same with that which the sun seems to describe, at the time of the two equinoxes of spring and autumn.—— *Equinoctial Points*, the two points, Aries and Libra, where the equinoctial and ecliptic cross each other.——*Equinoctial Colure*, the great circle passing through the poles of the sphere, and the equinoctial points.

EQUINOX, in astronomy, the time when the sun enters either of the equinoctial points, where the ecliptic intersects the equinoctial. When the sun is in this situation, the horizon of every place is divided into two equal parts by the circle bounding light and darkness; hence the sun is visible everywhere twelve hours, and invisible for the same time in each 24 hours. As the sun is in one of them, in the spring, viz. March 21st, it is called the *vernal* equinox; and in the other, in autumn, viz. September 23d, it is called the *autumnal* equinox. At all other times the lengths of the day and night are unequal, and their difference is the greater the more we approach either pole, and in the same latitude it is every where the same. Under the line this inequality entirely vanishes: there, during the day, which is equal to the night, the sun always ascends six hours, and descends six hours. In the opposite hemisphere of our earth, the inequality of the days increases in proportion to the latitude: the days increase there, while the nights diminish with us, and *vice versâ*.

EQUIPAGE, the furniture of an army or body of troops, infantry or cavalry, including whatever is necessary for a military expedition.——*Camp equipage* includes tents, and everything necessary for accommodation in camp.——*Field equipage* consists of arms, artillery, waggons, tumbrils,





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IT IS THE PROVINCE OF A JUDGE TO LOOK TO THE OBJECTS OF THE LEGISLATURE; HE IS NOT TO SET ASIDE THE LAW, BUT TO EXPOUND IT.

&c.——When we speak of a body of troops being furnished with arms and warlike apparatus, we say they are *equipped* for service.

EQUIPOL'LENCE, in logic, an equivalence, or agreement, either as to the nature of the thing, or as to the grammatical sense of any two or more propositions; that is, when two propositions signify one and the same thing, though they express it differently.

EQUI'RIA, in antiquity, games instituted by Romulus in honour of Mars, and which consisted in horse-racing. They were celebrated on the third of the calends of March.

EQUISE'TUM, in botany, Horsetail, a genus of plants in the Linnæan system, class 24 *Cryptogamia*, order 1 *Filices*. Natural order of ferns.

EQ'UITANT, in botany, a term used in the foliation of plants, for leaves that ride as it were, over one another.

EQ'UITES, amongst the Romans, were persons of the second degree of nobility, immediately succeeding the senators in point of rank. Every *eques* or knight had a horse kept at the public charge; he received also the stipend of a horseman, to serve in the wars, and wore a ring, which was given him by the state. The *equites* composed a large body of men, and constituted the Roman cavalry; for there was always a sufficient number of them in the city, and nothing but a review was requisite to fit them for service.

EQ'UITY, in a moral sense, is the impartial distribution of justice. So, in an enlarged view, Blackstone observes, "equity, in its true and general meaning, is the soul and spirit of all law; positive law is construed, and rational law is made by it. In this, equity is synonymous with justice." In English jurisprudence, a court of equity or chancery, is a court which corrects the operation of the literal text of the law, and supplies its defects, by reasonable construction, and by rules of proceeding and deciding, which are not admissible in a court of law. Equity then, is the law of reason, exercised by the chancellor or judge, giving remedy in cases to which the courts of law are not competent. It will remove legal impediments to the fair decision of a question depending at law. It will prevent a party from improperly setting up, at a trial, some title or claim which would be inequitable. It will compel him to discover, on his own oath, facts which he knows are material to the right of the other party, but which a court of law cannot compel the party to discover. It will provide for the safety of property in dispute pending litigation. It will counteract, or control, or set aside, fraudulent judgments. It will also exercise, in many cases, *exclusive* jurisdiction; particularly in granting special relief beyond the reach of the common law. It will grant injunctions to prevent waste or irreparable injury, or to secure a settled right, or to prevent vexatious litigations, or to compel the restitution of title deeds; it will appoint receivers of property, where it is in danger of misapplication; it will prohibit a party from leaving the country in order to avoid a suit; it will decree a specific performance of contracts respecting real estates; it will, in many cases, supply the imperfect execution of instruments, and reform and alter them according to the real intention of the parties; it will grant relief in cases of lost deeds and securities; and, in all cases in which its interference is asked, its general rule is, that he who asks equity must do equity. In short, its jurisdiction is almost undefined, where the positive law is silent, but substantial justice entitles the party to relief. It is, however, deeply to be regretted, that the intricacy of our laws renders it so often necessary to seek redress in a court of equity. *Equitas sequitur legem* is an old maxim in law, but from the great increase of suits in chancery, some think it ought to be thus translated: "after a man has been at law, it is necessary that he should go to equity."

EQUITY OF REDEMPTION, in law, is the advantage allowed to one who mortgages his property, to have a reasonable time allowed him to redeem it; for although the estate, upon non-payment of the money, becomes vested in the mortgagee, yet equity considers it only a pledge for the money, and gives the party a right to redeem, which is called his *equity of redemption*.

E'QUUS, in zoology, a genus of animals comprehending those useful domestic animals, the horse, the ass, and the mule.

EQUIV'ALENTS, a term employed in chemical philosophy, to express the particular weight or quantity of any substance which is necessary to saturate any other with which it can combine. Tables of the combining quantities of all chemical agents have been drawn up and arranged to guide the chemist in experimental researches. The utility of these tables is very extensive; and they are rendered still more useful when accompanied by a logometric sliding scale, the application of which to this purpose was a happy invention of Dr. Wollaston. ——In a general sense, the word *equivalent* signifies that which is equal in value, weight, worth, &c., with something else. Thus, a debtor who is not able to pay his creditor in money, may pay him an equivalent.

EQUIV'OCAL, an epithet for whatever is ambiguous or susceptible of different constructions; as, that man's character is very *equivocal*.

EQUIVOCA'TION, the use of equivocal terms, which may be understood by the hearer in a different sense from that in which they are taken by the speaker. He who is guilty of *equivocation*, may be fairly suspected of hypocrisy.

EQ'UIVOQUE, a word or phrase susceptible of different significations.

E'RA. [See Æra, Epoch, &c.]

ERA'DIATION, emission of rays of light.

ERAD'ICATED, in heraldry, an epithet for a tree or plant torn up by the root.

ERA'SED, in heraldry, an epithet for the

THE SCALE OF CHEMICAL EQUIVALENTS HAS GREATLY CONTRIBUTED TO FACILITATE THE STUDY AND PRACTICE OF CHEMISTRY.



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head or limb of any creature violently torn from the body so as to give it a jagged appearance.

ERECT', in botany, an epithet for a stem, leaf, or flower, &c.; as *erectus caulis*, a stem standing perpendicularly from the ground: *flos erectus*, an erect flower, or one which has its aperture directed upwards, &c.——In heraldry, an epithet for any thing upright, or perpendicularly elevated, as wings *erect*, &c.

EREMIT'ICAL, (from *eremite*, a hermit) living in solitude, or in seclusion from the world.

ER'GOT, in farriery, a stub, like a piece of soft horn, situated behind and below the pastern joint.——Also, a dark-coloured shoot, sometimes an inch long, from the ears of grain, particularly of rye.

ERI'CA, in botany, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species consist of different kinds of *heaths*.

ERIOCEPH'ALUS, in botany, a genus of plants, class 19 *Syngenesia*, order 4 *Polygamia necessaria*. The species are shrubs.

ERIOM'ETER, an instrument for measuring the fibres of wool, silk, &c.

ERIOPH'ORUM, in botany, a genus of plants, class 3 *Triandria*, order 1 *Monogynia*. The species are perennials.

ER'MINE, in zoology, a species of *Mustela*, with narrow ears, and of the size of the weasel. In winter, the whole body of the ermine is of a pure snow white, except the tip of the tail, which is of a deep black, and some spots of a greyish yellow about the head and shoulders; in summer, the upper part of the body is of a pale tawny brown colour, but the tail is tipped with black. The fur of the ermine is in great request; it was formerly one of the insignia of royalty, and is still used by judges. This animal inhabits the northern climates of Europe, Asia, and America; and in its habits it is very similar to those of the weasel, frequenting barns and outhouses, and feeding not only on mice and rats, but destroying poultry, birds, eggs, &c.——*Ermine*, in heraldry, a fur used in coat armour, and supposed to represent the linings and doublings of mantles and robes.

EROT'IC POETRY, a term for amatory poetry. The name of *erotic* writers has been applied particularly to a class of romance writers who belong to the later periods of Greek literature, and whose works abound in sophistical subtilties and ornaments.

EROTOMANY, a term employed by some writers to denote that modification of insanity, of which the passion of love is the origin, and in which the love of a particular individual constitutes the predominant idea, occupying the whole attention of the patient. It sometimes passes into perfect delirium, leads to suicide, hysterics, &c. Young people are peculiarly subject to it, who have an excitable nervous system and lively imagination, who give themselves up to an excess in pleasure, or are spoiled by reading romances, and rendered effeminate by an injudicious education and indolence.

ERPETOL'OGY, that part of natural history which treats of reptiles.

ERRAT'IC, wandering, or having no certain course; also, not fixed or stationary; hence the planets are called *erratic stars*; and fevers which observe no regular periods, are denominated *erratic fevers*.

ERRA'TUM, an error of the press; in the plural, *Errata*, a list of which is usually printed at the beginning or end of a book.

ER'ROR, a wandering or deviation from the truth. An Error may be either *voluntary* or *involuntary*; when committed through carelessness or haste it is a *blunder*.——*Error*, in law, is a mistake committed in pleading, or in a process; whereupon a *writ of error* is brought to remedy it, which carries the suit to another tribunal for redress.

ERUBES'CENCE, a blushing; redness of the skin or surface of any thing.

ERU'CA, the White-rocket, in botany, a species of *brassica*, with lyrate leaves, hairy stalks, and smooth pods.

ERUCTA'TION, the act of belching wind from the stomach; also a violent bursting forth or ejection of wind, &c. from the earth.

ERUDI'TION, the attainment of profound learning and extensive knowledge, obtained by study and instruction; particularly learning in history, antiquity, and languages, as distinct from the useful arts and sciences.

ERU'GINOUS, partaking of the substance or nature of copper or the rust of copper.

ERUP'TION, a violent breaking or bursting forth of anything, particularly of flames and lava from a volcano. Also, a sudden or violent rushing forth of men or troops for invasion.——In medicine, a sudden and copious excretion of humours on the skin in pustules.

ERYN'GIUM, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. The flowers are collected in a round head, similar to a thistle; the receptacle is paleaceous or chaffy; and the young shoots are esculent. One of the species of *eryngo* was formerly much employed as a tonic, but it has now gone out of use.

ERYSIP'ELAS, in medicine, an inflammatory affection, particularly of the skin, attended with fever. This disease is often called St. Anthony's fire: it is brought on by all the causes that are apt to excite inflammation, such as injuries of all kinds, the external application of stimulants, exposure to cold, and obstructed perspirations.

ERYTHRI'NA, in botany, the Coral-tree, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria*; the corolla of which is papilionaceous, and consists of four petals, the fruit is a very long pod, and the seeds kidney-shaped.

ERYTHROCYA'NEUS, in ornithology, the red and blue macaw. This bird is the finest of the parrot kind; being a full yard long, from the point of the bill to the end of the tail, and its plumage adorned with the most beautiful variety of colours.



WHEN BREAD CONTAINING "ERGOT" HAS BEEN EATEN, IT HAS SOMETIMES PRODUCED GANGRENE OF THE EXTREMITIES, AND DEATH.

THE DISEASE VULGARLY KNOWN BY THE NAME OF SHINGLES (FROM THE FRENCH "CEINGLE," A BELT), IS A SPECIES OF ERYSIPELAS.

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ESCALA'DE, in the military art, a furious attack made upon a rampart, or scaling the walls of a fortification, by filling up the ditches with bundles of faggots, called fascines, and entering by ladders; without proceeding in form, breaking ground, or carrying on regular works to secure the men —a mode of attack much adopted in the late wars, but generally accompanied with great slaughter.

ESCAL'OP, in ichthyology, a class of bivalvular shell-fish, whose shell is regularly indented. In the centre of the top of the shell is a trigonal sinus with an elastic cartilage for its hinge.

ESCA'PE, in law, is where a person arrested gains his liberty before he is delivered by law. In *civil* cases, after the prisoner has been suffered voluntarily to escape, the sheriff can never after retake him, and must answer for the debt; but the plaintiff may retake him at any time. In the case of a negligent escape, the sheriff, upon fresh pursuit, may retake the prisoner, and the sheriff shall be excused if he have him again before any action is brought against himself for the escape. In *criminal* cases, an escape of a person arrested is an offence against public justice, and the party is punishable by fine and imprisonment.

ESCA'PEMENT, a contrivance for transmitting the power of a timepiece to the balance or pendulum, to regulate its movements.

ESCAR'GATOIRE, a nursery of snails.

ESCARP'MENT, or ESCARP', in the military art, the exterior slope facing fortified works; the interior slope being the *counterscarp*.

ES'CHAR, in surgery, the crust or scab occasioned by burns or caustic applications.

ESCHAROT'IC, in medicine, a caustic application, or one which has the power of searing or destroying the flesh.

ESCHEAT', in law, lands or profits that fall to a lord within his manor, either by forfeiture, the death of the tenant, or through failure of heirs.

ES'CORT, a guard or company of armed men attending an officer, or baggage, provisions, or munitions conveyed by land, to protect them from an enemy, &c.

ESCRO'LL, in heraldry, one of the exterior ornaments of the escutcheon, representing a slip of parchment or paper, on which the motto is generally put.

ES'CUAGE, in feudal customs, a kind of knight-service, called service of the shield, by which the tenant was bound to follow his lord to the wars at his own charge.

ESCULA'PIAN (from *Æsculapius* the physician), pertaining to the healing art.

ES'CULENT, an epithet for such plants or roots as may be eaten.

ESCU'RIAL, a celebrated palace and monastery in Spain, about twenty miles from Madrid, built by Philip II. It is in the shape of a gridiron, and contains the king's palace, St. Lawrence's church, the monastery of Jeronomites, and the free schools. It was erected in consequence of a vow made by Philip, on the day of the battle of St. Quentin, and dedicated to St. Lawrence, whose festival was on that day. Though the building is immensely large and the most superb in the kingdom, its exterior has rather the austere simplicity of a convent than the elegance of a palace. It is a quadrangle, 740 feet in length by 580 in breadth; and is said to have cost 50 millions of dollars.

ESCUTCH'EON, in heraldry, the shield on which a coat of arms is represented. It is an imitation of the ancient shields used in war.

ES'DRAS, the name of two apocryphal books, usually bound up with the Scriptures. They were always excluded the Jewish canon.

ESPOU'SALS, in law, a contract or mutual promise of marriage between a man and woman.

ESPRIT DE CORPS, a French phrase, signifying that species of attachment with which persons, more especially military men, are animated to the corps or service to which they belong.

ESOTER'IC, an epithet applied to the private instructions and doctrines of Pythagoras; opposed to *exoteric*, or public.

ESPALIER, a fruit tree, having the branches trained to a frame, or fastened to stakes, and spread laterally. *Espaliers* are usually planted in rows about a garden, so as to enclose quarters or separate parts.

ESPIONAGE, a system of employing spies, or secret emissaries, either in military or political affairs.

ESPLANA'DE, in fortification, the glacis of the counterscarp, or sloping of the parapet of the covered way towards the country. The word is now also used for a sloping walk or promenade.

ESQUIRE, anciently a shield or armour-bearer: the person that attended a knight in time of war, and carried his shield. It is now a title given to the sons of knights, or those who serve the king in any worshipful calling, as officers of the king's courts, counsellors at law, &c. It has, however, become a sort of vague and undefined compliment, placed at the end of a man's name, and may be regarded more as an expression of respect than anything else.

ES'SAY, in literature, a composition intended to prove or illustrate a particular subject, usually shorter and less methodical than a treatise.

ES'SENCE, in chemistry, denotes the purest, most subtile, and balsamic part of a body; extracted either by simple expression, or by means of fire, from fruit, flowers, &c. Of these there are a great variety, used on account of their agreeable smell and taste, by apothecaries, perfumers, and others.——In philosophy, that which constitutes the particular nature of a being or substance, and which distinguishes it from all others.

ESSE'NES, or ESSE'NIANS, in Jewish antiquity, one of the three ancient sects among that people, who outdid the Pharisees in their most rigorous observances. They allowed a future state, but denied a



A JUSTICE OF THE PEACE IS AN ESQUIRE SO LONGER THAN HE HOLDS HIS COMMISSION, UNLESS HE IS OTHERWISE ENTITLED TO IT.

THE TITLE OF ESQUIRE WAS FIRST USED TO PERSONS OF FORTUNE, WHO WERE NOT ATTENDANTS ON KNIGHTS, ABOUT THE YEAR 1345.

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THE OILS OF PLANTS ARE CALLED ESSENTIAL, BECAUSE IN THEM THE FRAGRANCE OR ODOURS OF THE VEGETABLES ARE CHIEFLY FOUND.

resurrection from the dead. Their way of life was very singular; they did not marry, but adopted the children of others whom they bred up in the institutions of their sect: they despised riches, and had all things in common. They are not once mentioned in the New Testament, because from their love of solitude, they were little known, and from their inoffensive way of life our Saviour had no occasion to censure them, as he frequently does the Pharisees and Sadducees.

ESSENTIAL OILS, in chemistry, volatile oils, having a strong aromatic smell, and which are drawn from plants by distillation in an alembic with water, in distinction from empyreumatic oils, which are raised by an open fire without water. The principal volatile or essential oils are those of turpentine, aniseed, nutmeg, lavender, cloves, carraway, peppermint, spearmint, sassafras, camomile, and citron. The taste of these oils is acrid and burning; and their odour very pungent, generally resembling the taste and smell of the vegetables affording them.——*Essential salts*, such salts as are procured from plants, and have the property of crystalizing——*Essential properties*, in logic, such as necessarily depend upon, and are connected with, the nature and essence of a thing, in distinction from the *accidental*.

ESSOIN', in law, an excuse by reason of sickness or any other just cause for one that is summoned to appear and answer an action, &c.——The first three days of a term are called *essoin days*, as three days are allowed for the appearance of suitors.

ES'SORANT, in heraldry, a term for a bird standing on the ground with its wings expanded, as if it had been wet, and was drying itself.

ESTAB'LISHMENT, in a military sense, the quota of officers and men in an army, regiment, or company, which being much greater in war than in peace, has given rise to the distinctive terms of War Establishment and Peace Establishment. —— The word is also used when speaking of the ministers of a church established by law, as belonging to the *Establishment*.

ESTAFETTE, a military courier, sent from one part of an army to another; or a speedy messenger who travels on horseback.

ESTACA'DE, in the military art, a French word for a dyke constructed with piles in the sea, a river, or morass, to oppose the entry of troops.

ESTATE, in law, the title or interest that a person has in lands, tenements, or other effects; comprehending the whole in which a person has any property. Estates are either *real* or *personal*; otherwise distinguished into freeholds, which descend to heirs; or chattels and effects, which go to executors or administrators. There are also estates for life, for years, at will, &c. ——*Estates of the Realm* are the distinct parts of any state or government, as the king, lords, and commons, in England.

EST'HER, a canonical book of the Old Testament, containing the history of a Jewish virgin, dwelling with her uncle Mordecai at Shushan, in the reign of Ahasuerus, one of the kings of Persia. Archbishop Usher supposes Darius Hystaspes to be the Ahasuerus of Scripture, and Artystona to be Esther. Scaliger considers him as Xerxes, and his queen Hamestris as Esther. Josephus, on the contrary, asserts that Ahasuerus was Artaxerxes Longimanus; and the Septuagint, throughout the whole book of Esther, translates Ahasuerus by Artaxerxes.

ESTIMATE, a judgment or opinion formed of the value, degree, extent, or quantity of any thing, without ascertaining it. Also a computation of probable value or cost, such as is generally prepared by engineers, architects, and builders, previous to the commencement of any undertaking.

ESTIVATION, the act of passing the summer; and whatever pertains to summer is termed *estival*.——*Estivation*, in botany, denotes the disposition of the petals within the floral gem or bud; 1. *convolute*, when the petals are rolled together like a scroll; 2. *imbricate*, when the edges lap over; 3. *conduplicate*, when they are doubled together; 4. *valvate*, when as they are about to expand they are placed liked the glumes in grasses.

ESTOVERS, in law, a reasonable allowance out of lands or goods for the subsistence of a man accused of felony, during his imprisonment. But it is more generally taken for certain allowances of wood made to tenants, and called, from the Saxon, *house-bote, hedge-bote, plough-bote*, &c.

ESTRAPA'DE, the motion of a restive horse, which, to get rid of his rider, rears high and kicks violently.

ESTRAY, a tame beast found without any owner known, which, if not reclaimed within a year and a day, falls to the lord of the manor.

ESTREAT, in law, a true copy or duplicate of an original writing, particularly of the penalties or fines to be levied by the bailiff or other officer, of every man for his offence.

ESTUARY, an arm of the sea; or the mouth of a river or lake, where the tide meets the current.

ES'URINE SALTS, in chemistry, those which are of a fretting or eating quality, which abound in the air of places situated near the sea-coast, and where great quantities of coal are burnt.

ET CÆTERA, and the contraction *etc.* or *&c.*, denote the rest, or others of the kind; and so forth.

ETCH'ING, a method of engraving on copper or steel, in which the lines and strokes are eaten in with aquafortis. [See ENGRAVING.]

ETER'NITY, everlasting duration, without beginning or end; a term expressive of that perpetuity which can only be imagined, on account of the impossibility of conceiving when time was not, or will not be; hence many have concluded that there has been an eternity of past time, and must be an eternity of future time.

THE FLAVOUR OF LIQUORS ARISES FROM THEIR ESSENTIAL OILS, AND THEIR INTOXICATING PROPERTIES FROM ALCOHOL.



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SULPHURIC ETHER WAS FIRST MADE KNOWN UNDER THE NAME OF SWEET OIL OF VITRIOL, IN 1540, BY WALTHERUS CORDUS.

ETHER ALTERS GRADUALLY WHEN CONTACT OF AIR; ABSORBING OXYGEN, AND CHANGING INTO ACETIC ACID AND WATER.

ETE'SIAN WINDS, a term applied to yearly or stated periodical winds, answering to the monsoons of the East Indies.——By *Etesian winds*, in ancient history, are meant such winds as blow at stated times of the year, from whatever part of the compass they may come.

ETHER, in chemistry, a light, volatile, and inflammable liquid, the product of the distillation of equal measures of alcohol and sulphuric acid. Its specific gravity is to water, as 632 to 1000: it boils at 98°.—— The name of ether is also given to the subtile matter or gas which fills space, and is supposed to be much finer and rarer than atmospheric air.

ETHE'REAL, containing or filled with ether; as *ethereal* space, or the *ethereal* regions.

ETH'ICS, the doctrine of manners, or science of moral philosophy, which teaches men their duty and the springs and principles of human conduct.

ETHIOP'S MINERAL, in chemistry, black sulphuret of mercury.——*Ethiop's martial*, iron in the first stage of calcination.

ETHMOID'AL, in anatomy, one of the common sutures of the skull, which goes round the *os ethmoides*, from which it derives its name, separating it from the bone in contact with it.——The *os ethmoides* is one of the most curious bones in the human body: it is exceedingly light, spongy, and consists of many convoluted plates, which form a net-work, like honey comb. It is curiously enclosed in the *os frontis*, betwixt the orbitary processes of that bone. One horizontal plate receives the olfactory nerves, which perforate that plate with such a number of small holes, that it resembles a sieve; whence the bone is named *cribriform*, or *ethmoid* bone. Other plates, dropping perpendicularly from this one, receive the divided nerves, and give them an opportunity of expanding with the organ of smelling; and these bones upon which the olfactory nerves are spread out, are so much convoluted as to extend the surface of this sense very greatly, and are named spongy bones. Another flat plate lies in the orbit of the eye; and being very smooth, by the rolling of the eye, it is named the *os planum*, or smooth bone. So that the ethmoid bone supports the fore-part of the brain, receives the olfactory nerves, forms the organ of smelling, and makes a chief part of the orbit of the eye.

ETHNICAL, pertaining to the heathen nations, or those which were not converted to Christianity.

ETHOL'OGY, a treatise on morality or the science of ethics. Hence, one who writes on the subject of manners and morality, is termed an *ethologist*.

ETIOLATION, the operation of being whitened, by excluding the light of the sun: a term often used in botany.

ETIOL'OGY, an account of the causes of anything, particularly of diseases.

ETIQUETTE, (pron. *etiket'*) rules and ceremonies of good manners observed towards particular persons, either at court or in genteel life.

ETRAPA'DE, in archæology, a crane and pulley, which was formerly used in France by way of a torture.

ETYMOL'OGY, a branch of philology, which teaches the origin and derivation of words, with a view to ascertain their radical or primary signification. In grammar, it comprehends not only the derivation of words, but their various inflections and modifications. One who is well versed in the deduction of words from their originals, is called an *etymologist*.

EU'CHARIST, the sacrament of the Lord's Supper; so called because the death of our Redeemer is thereby commemorated with thankful remembrance, and bread and wine are taken as emblems of his flesh and blood.

EUCHLO'RINE, in chemistry, protoxyde of chlorine.

EUCHOL'OGY, the ritual of the Greek church, in which are inscribed the order of ceremonies, sacraments, and ordinances.

EUCHYM'IA, or EU'CHYMY, in medicine, a good state of the blood and other fluids of the body.

EUCHYSID'ERITE, in mineralogy, a variety of augite.

EU'CLASE, a species of emerald, of a greenish white colour, and remarkably brittle.

EU'CRASY, in medicine, such a well proportioned mixture of qualities in bodies, as to constitute sound health.

EU'DIALYTE, a mineral of a brownish red colour.

EUDIOM'ETER, an instrument for ascertaining the purity of air, or the quantity of oxygen and nitrogen in atmospherical air. When a mixture of nitrous gas is to be made with atmospheric air, the most convenient apparatus consists in a glass tube closed at top, and graduated by a diamond into cubic inches and parts. The lower aperture may be widened, in order that the gases may more easily be passed up, and likewise to afford the facility of its standing alone upon the pneumatic shelf. It is likewise usual and advantageous to fit a stopper in the mouth by grinding. There are various kinds of eudiometers, by which the method of analyzing air differs; and in all of them there is at times some uncertainty. The eudiometer of Davy, more recently invented, is, however, said to be free from objection; and the apparatus is portable, simple, and convenient: Take a small glass tube, graduated into one hundred equidistant parts; fill this tube with the air to be examined, and plunge it into a bottle, or any other convenient vessel, containing a concentrated solution of green muriate or sulphate of iron, strongly impregnated with nitrous gas. All that is necessary to be done, is, to move the tube in the solution a little backwards and forwards; under these circumstances, the oxygen gas contained in the air will be rapidly absorbed, and condensed by the nitrous gas in the solution, in the form of nitrous acid. It is



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necessary to observe, that the state of the greatest absorption should be marked, as the mixture afterwards emits a little gas which would alter the result. The air of London, examined by means of Davy's eudiometer, was found, in all the different seasons of the year, to contain 0.21 of oxygen; and the same was the case with air taken at Islington and Highgate; in the solitary cells in Coldbath-fields prison, and on the river Thames. But the quantity of water contained in a given bulk of air from these places, differed considerably.

EUDIOMETRY, the measurement of the quantity of oxygen contained in atmospheric air, or in any gas in which it is not intimately combined. No sooner was the composition of the atmosphere known, than it became an inquiry of importance to find out a method of ascertaining, with facility and precision, the relative quantity of oxygen gas contained in a given bulk of atmospheric air. To attain such a measurement, it is merely necessary to present to atmospheric air, some substance which combines with its oxygen, and which either does not afford any gaseous product, or affords one that is easily abstracted and measured.—[See the preceding article.]

EUHARMONIC, in music, producing harmony or concordant sounds.

EUKAIRITE, a mineral of a shining lead gray colour and granular structure.

EULOGY, a speech or writing in commendation of a person on account of his valuable qualities or beneficial services.

EUNOMY, equal law, or a well-adjusted constitution of government.

EUPATORIUM, in botany, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*. The species are perennials, and consist of different kinds of agrimony.

EUPEPSY, in medicine, good concoction in the stomach; perfect digestion.

EUPHEMISM, in rhetoric, a figure by which things in themselves disagreeable and shocking, are expressed in terms neither offensive to good manners nor repulsive to "ears polite."

EUPHONY, an easy and smooth enunciation of words. A grammatical licence, whereby a letter that is too harsh is converted into a smoother, contrary to the ordinary rules, for the purpose of promoting smoothness and elegance in the pronunciation.

EUPHORBIA, in botany, a genus of plants of many species, mostly shrubby herbaceous succulents, some of them armed with thorns. They belong to class 11 *Dodecandria*, order 3 *Trigynia*.

EUPHORBIUM, in medicine, a concrete gum-resin, the produce of an African perennial plant. When first chewed it has little taste, but it soon gives a very acrid burning impression to the tongue, palate, and throat, which is very permanent, and almost insupportable.

EURITE, or WHETSTONE, in geology, a finely granulated felspar, or very small-grained granite, with the parts so intimately blended as often to appear compact.

EURITHMY, in architecture, painting, and sculpture, is a certain majesty, elegance, and ease in the various parts of a body, arising from its just proportions.—In medicine, *eurithmy* signifies a good disposition of the pulse.

EUSTATHIANS, a sect of Christians, the followers of Eustathius, an Armenian bishop in the fourth century, who, under pretence of great purity and severity, introduced many irregularities.

EUSTYLE, in architecture, a sort of building in which the columns are placed at the most convenient distances from each other, most of the intercolumniations being just two diameters and a quarter of the column.

EUTYCHIANS, a religious sect in the fifth century, called after one Eutychus, who maintained, among other things, that the flesh of Christ differed in its nature from that of mankind.

EVACUANTS, in medicine, such medicines as diminish the animal fluids, by throwing out some morbid or redundant humour, or such as attenuate and promote its motion and circulation.

EVACUATION, in medicine, the discharge of superfluous humours or excrements out of the body, by cathartics, &c.—*Evacuation*, in military affairs, the leaving a town, fortress, or any place which has been occupied as a military post or position.

EVANGELIST, a general name given to those who write or preach the gospel of Jesus Christ. The word is of Greek origin, signifying one who publishes glad tidings, or is the messenger of good news. But it is applied principally to the writers of the four Gospels, or *Evangelia*, viz. Matthew, Mark, Luke, and John.—The word also denotes certain ministers in the primitive church, who assisted the Apostles in diffusing the knowledge of the gospel, and travelled about to execute such commissions as they were entrusted with, for the advancement of Christianity.

EVAPORATION, in natural philosophy, is the conversion of water into vapour, which, in consequence of becoming lighter than the atmosphere, is raised considerably above the surface of the earth, and afterwards, by a partial condensation, forms clouds. It differs from exhalation, which is properly a dispersion of dry particles from a body. When water is heated to 212° it boils, and is rapidly converted into steam; and the same change takes place in much lower temperatures; but in that case the evaporation is slower, and the elasticity of the steam is smaller. As a very considerable proportion of the earth's surface is covered with water, and as this water is constantly evaporating and mixing with the atmosphere in the state of vapour, a precise determination of the rate of evaporation must be of very great importance in meteorology.

EVASION, the act of eluding or escaping from the pressure of an argument, or from an accusation, charge, or interrogatory.



THE GREATEST EVAPORATION FROM THE EARTH'S SURFACE, IN THIS COUNTRY, TAKES PLACE IN JUNE; THE LEAST, IN JANUARY.

IN HOT, DRY WEATHER, THE EVAPORATION FROM PLANTS IS IMMENSE; IN DAMP OR WET WEATHER IT IS INCONSIDERABLE.

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EVATES, a branch of the Druids, or ancient Celtic philosophers. Strabo divides the British and Gaulish philosophers into three sects, Bards, Evates, and Druids. He adds, that the Bards were the poets and musicians; the Evates, the priests and naturalists; and the Druids were moralists as well as naturalists.

EVECTICA, or EVECTICS, that part of physic which teaches how to acquire a good habit of body.

EVECTION *of the moon*, in astronomy, one of her most considerable irregularities, caused by the action of the sun upon her; the general effect of which is to diminish the equation of the centre at the syzygies, and to increase it in the quadrature.

EVENING, or EVE, the precise time when evening begins is not ascertained by usage. In strictness, *evening* commences at the setting of the sun, and continues during twilight, and *night* commences with total darkness. But it sometimes includes a portion of the afternoon; as in the phrase, "the morning and evening service of the church;" and in customary language it extends to bed-time; as "I spent the evening with a friend."——Figuratively, we use it for the decline of life, or old age; as "the *evening* of life."——*Evening star*, in astronomy, Hesperus or Vesper; Venus, when visible in the evening.

EVERGREEN, in horticulture, a species of perennials which preserve their verdure all the year round, such as laurels, hollies, bays, pines, firs, &c.

EVIDENCE, in its most general sense, means the proofs which establish, or have a tendency to establish, any facts or conclusions. It may be divided into three sorts, mathematical, moral, and legal. The first is employed in the demonstrations which belong to pure mathematics; the second is employed in the general affairs of life, and in those reasonings which are applied to convince the understanding in cases not admitting of strict demonstration; the third is that which is employed in judicial tribunals for the purpose of deciding upon the rights and wrongs of litigants. According to our system of jurisprudence in common law trials, it is the peculiar province of a jury to decide all matters of fact. The verdict of the jury is, however, to be given, and the trial is to be had, in the presence of a judge or judges, who preside at the trial, and are bound to decide all matters of law, arising in the course of the trial. Whenever, therefore, a question arises, whether anything offered as proof at such trial is or is not proper to go before the jury as evidence, that question is to be decided by the court, and, unless permitted by the court, it can never legally come before the consideration of the jury. Hence, whatever is so permitted to be brought before the jury, for the purpose of enabling them to decide any matter of fact in dispute between the parties, is in a legal sense, *evidence*, and is so called in contradistinction to mere argument and comment. This gives rise to a very important distinction, at the common law, as to the *competency* and the credibility of evidence. It is *competent*, when by the principles of law, it is admissible to establish any fact, or has any tendency to prove it. It is *credible*, when, being introduced, it affords satisfactory proof of the fact. It follows, therefore, that evidence may be *competent* to be produced before a jury, when it may nevertheless not amount to *credible* proof, so as to satisfy the minds of the jury; and, on the other hand, it may be such as, if before them, would satisfy their minds of the truth of the fact, but yet, by the rules of law, it is not admissible. Whether there is *any evidence* of a fact, is a question for the court; whether it is *sufficient*, is a question for the jury.

EVIL, in philosophy, &c. is either *moral* or *natural*. Moral evil is any deviation of a moral agent from the rules of conduct prescribed to him. Some make the essence of moral evil consist in the disagreement of our manners to the divine will, whether known by reason or revelation; others, in being contrary to reason and truth; and others, in being inconsistent with the nature, faculties, affections, and situation of mankind.

EVOCATI, soldiers among the Romans, who having served their full time in the army, went afterwards volunteers at the request of some favourite general; on which account they were called by the honourable names of *Emeriti* and *Beneficiarii*.

EVOCATION, in Roman antiquity, a solemn invitation or prayer to the gods of a besieged town, to forsake it and come over to the besiegers.

EVOLUTE, in geometry, an original curve from which another is described.

EVOLUTION, in military tactics, the complicated movement of a body of men when they change their position by countermarching, wheeling, &c.——In geometry, the unfolding or opening a curve, and making it describe an evolvent.——In algebra, the extraction of roots from powers; the reverse of involution.

EVOLVENT, in geometry, the curve described from the evolute.

EWRY, an office in the royal household, where they take care of the table linen, &c.

EXACERBATION, in medicine, the increased violence of a disease. The term is generally restricted to the periodical increase of remittent and continued fevers, where there is no absolute cessation of the fever.

EXACTION, the act of demanding with authority, and compelling to pay or yield; as the *exaction* of tribute or obedience.

EXÆRESIS, in surgery, the operation of extracting or taking away something that is hurtful to the human body.

EXAGGERATION, in rhetoric, a kind of hyperbole, whereby things are augmented or amplified, by saying more than the strict truth will warrant.——In painting, a method of giving a representation of things too strong for the life.

EXALTATION, in astrology, the dignity



IT IS A GENERAL RULE IN LAW, THAT HEARSAY, OR MERE REPORT AND REPUTATION OF A FACT, IS NOT TO BE TAKEN AS EVIDENCE.

IF A MAN KILL ANOTHER UPON SLIGHT PROVOCATION, OR USE DANGEROUS WEAPONS, THE LAW PRESUMES THE ACT IS MALICIOUS.

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which a planet acquires in certain signs or parts of the zodiac, which dignity is supposed to give it an extraordinary efficacy and influence.——In pharmacy, the refinement or subtilization of bodies or their qualities and virtues.

EXAMINATION, in its primary sense, is a careful and accurate inspection or inquiry, in order to discover the real state of any thing.——In judicial proceedings, an attempt to ascertain truth, generally on the oath of the party examined, by interrogatories.——In schools, an inquiry into the acquisitions of the students, by questioning them in literature and the sciences, or by hearing their recitals.——In chemistry and the sciences generally, a searching for the nature and qualities of substances, by experiments.

EXAMINERS, in law, two officers in the court of Chancery, who are appointed, on oath, to examine witnesses on either side.

EXANTHEMA, or EXANTHEM'ATA, among physicians, any kind of efflorescence or eruption, as in measles, small-pox, scarlatina, &c. The term is now limited by systematic nosologists, to such eruptions as are accompanied with fever.——The adjective is *exanthematous*.

EXANTHROPIA, in medicine, a species of melancholy madness, in which the patient fancies himself a brute.

EX'ARCH, in antiquity, an officer sent by the emperors of the East into Italy, as prefect or governor.——*Exarch* also denotes an officer still subsisting in the Greek church, who visits the provinces, in order to see whether the bishops and clergy do their duty.

EXARTICULATION, in surgery, the dislocation of a joint.

EXAUCTORATION, or EXAUTHORATION, in Roman antiquity, temporary dismission from service: thus the *exauctori milites* were deprived of their pay and arms, without being absolutely discharged.

EXCALCEATION, among the Hebrews, was a law, whereby a widow, whom her husband's brother refused to marry, had a right to summon him to a court of justice, and, upon his refusal, might *excalceate* him, that is, pull off one of his shoes, and spit in his face: both of which were considered actions of great ignominy.

EX'CELLENCY, a title of honour formerly given to kings and emperors, but now given to governors, ambassadors, &c. who are elevated by virtue of particular offices. The title of excellency is in no case hereditary, or transferable from one member to another, but always belongs to the office, and is only borne, on the European continent, by ministers in actual service, by the highest court and military dignitaries, and by ambassadors and plenipotentiaries. Foreign ministers are addressed by the title of *your excellency*, by way of courtesy, even if they have no rank which entitles them to this distinction; but *chargés d'affaires* never receive this title.

EXCEPTION, in law, the denial of what is alleged and considered as valid by the other party, either in point of law or in pleading.——*Bill of exceptions*, is a statement of exceptions to evidence, filed by the party, and which the judge must sign or seal.

EXCESS', in arithmetic and geometry, is the difference between any two unequal numbers or quantities, or that which is left after the less is taken from or out of the greater.——In morals, any indulgence of appetite or passion, beyond the laws of God or the rules of propriety.

EXCHANGE, in commerce, traffic by permutation, or the act of giving one thing or commodity for another. The receipt or payment of money in one country for the like sum in another, by means of *bills of exchange*. Thus, *A* in London is creditor to *B* in Paris, to the amount of 100*l*. *C* in London is debtor to *D* in Paris, in a like sum: by the operation of the bill of exchange, the London creditor is paid by the London debtor, and the Paris creditor is paid by the Paris debtor; and, consequently, two debts are paid, though no specie is sent from London to Paris, or from Paris to London. This is the principle of a bill of exchange; and the great convenience here represented is the foundation of exchange itself. That variation *above* and *below par*, which is called the course of exchange, results from the same causes that act upon the price of commodities of every other kind. If bills upon Paris be scarce, that is, if Paris is but little indebted to London, the London creditor, who wants bills on Paris to remit to that city, is obliged to purchase them dearly; then the course of exchange is *above par:* if, on the other hand, London owes less to Paris than Paris owes to London, Paris bills will be proportionably plenty, and the exchange with that city *below par*. Hence, it is a maxim that, when the course of exchange rises *above par*, the balance of trade runs against the country where it rises.——In London, bills of exchange are bought and sold by brokers, who go round to the principal merchants, and discover whether they are buyers or sellers of bills. A few of the brokers of most influence, after ascertaining the state of the relative supply of and demand for bills, suggest a price at which the greater part of the transactions of the day are settled, with such deviations as particular bills, from their being in very high or low credit, may be subject to. In London and other great commercial cities, a class of middle-men speculate largely on the rise and fall of the exchange, buying bills when they expect a rise, and selling them when a fall is anticipated.——*Exchange*, in arithmetic, is the finding what quantity of the money in one place is equal to a given sum of another, according to a certain course of exchange.——*Course of exchange* is the current price betwixt two places, which is always fluctuating and unsettled.——*Arbitration of exchange* is a calculation of the exchanges of different places to discover which is the most profitable.

IT IS USUAL IN DRAWING FOREIGN BILLS OF EXCHANGE, TO DRAW THEM IN SETS, OR DUPLICATES, LEST THE FIRST SHOULD BE LOST.

WHEN BILLS ARE DRAWN IN SETS, EACH MUST CONTAIN A CONDITION THAT IT SHALL BE PAYABLE ONLY WHILE THE OTHERS REMAIN UNPAID.



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——*Exchange of Prisoners*, in war, the act of giving up men on both sides, upon certain conditions agreed to by the contending parties.

EXCHA'NGE, (often contracted into CHANGE), signifies a building or other place in considerable trading cities, where the merchants, agents, bankers, brokers, and other persons concerned in commerce, meet at certain times, to confer and treat together of matters relating to exchanges, remittances, payments, adventures, assurances, freights, and other mercantile negociations both by sea and land.

EXCHEQUER, in British jurisprudence, an ancient court of record, in which all causes concerning the revenues and rights of the crown are heard and determined, and where the crown-revenues are received. It took this name from the cloth that covered the table of the court, which was party-coloured or chequered. This court is said to have been erected by William the Conqueror.——The public Exchequer is under the control of the lords of the Treasury, and of a minister called the chancellor of the exchequer.——To institute a process against a person in this court, is called to *exchequer* him.

EXCHEQUER-BILLS, bills for money, or promissory notes, issued from the exchequer, under the authority of government, and bearing interest.

EXCI'SE, an inland duty, paid in some instances upon the commodity consumed, or on the retail, which is the last stage before consumption; but in others this duty is paid at the manufactories. The excise was first introduced by the parliament which beheaded Charles I. and its great founder was Mr. Pym; and is now one of the most considerable branches of the national revenue. It was formerly farmed out, but is at present managed for the government by commissioners, who receive the whole product of the excise, and pay it into the exchequer. ——The officer who inspects exciseable commodities and rates the duties on them is called an *exciseman*.

EXCISION, in surgery, a cutting out, or cutting off any part of the body.

EXCITABILITY, susceptibility of increased vital action by the force of stimulants.

EXCITING CAUSES, in medicine, are those which immediately produce disease, or those which excite the action of predisponent causes.

EXCLAMATION, emphatical utterance; or the sign by which emphatical utterance is marked: thus (!).——In grammar, a word expressing some passion, as wonder, fear, &c.

EXCOMMUNICATION, an ecclesiastical censure, whereby a person is excluded from communion with the church, and deprived of some civil rights. In the present state of church-government in England, excommunication is seldom used but as a sort of writ of outlawry on contempt of the bishop's court, in the several descriptions of causes that belong to ecclesiastical jurisdiction. It is published in the church, and if the offender does not submit in forty days, the civil magistrate interposes, and the excommunicated person is imprisoned till he submits, and obtains absolution.—— The Roman Catholics use the phrase *fulminating an excommunication*, to signify the solemn pronouncing of an excommunication after several admonitions. This fulmination principally consists of curses, execrations, and other odious ceremonies; and is called *anathema*, [which see.]——*Excommunication* amongst the Jews was of three kinds or degrees. The first was called *Niddui*, and was a separation for a few days. The second was *Cherem*, and was a separation attended with execration and malediction; the third was *Shammatho*, and was the last and greater excommunication.——*Excommunication* amongst the Greeks and Romans excluded the person, on whom it was pronounced, from the sacrifices and temples, and delivered him over to the *Furies*.

EXCREMENTI'TIOUS, in medicine, consisting of matter evacuated or proper to be evacuated from the human body.

EXCRES'CENCE, in surgery, a preternatural tumour which arises upon the skin, either in the form of a wart or tubercle.

EXCRE'TION, in medicine, a separation of some fluid, mixed with the blood, by means of the glands. It is also applied to the discharges from the bowels, which are called *alvine excretions*.

EXCU'BLE, in antiquity, the watches and guards kept in the day by the Romans, in distinction from *vigilia*, which were kept at night.

EX'EAT, in ecclesiastical history, a term employed in the permission which a bishop grants to a priest to go out of his diocese.

EXECU'TION, in law, the completing or finishing some act, as of judgment or deed, and it usually signifies the obtaining possession of any thing received by judgment of law. Also, the carrying into effect a sentence or judgment of court; as the infliction of capital punishment.

EXECU'TIONER, the officer who inflicts capital punishment in pursuance of a legal warrant; the common hangman.

EXECU'TIVE, in politics, that branch of the government which executes the functions of governing the state. The word is used in distinction from *legislative* and *judicial*. The body that deliberates and enacts laws, is *legislative*; the body that judges or applies the laws to particular cases, is *judicial*; and the body that carries the laws into effect, or superintends the enforcement of them, is *executive*. In all monarchical states this power rests in the prince.

EXECU'TOR, in law, a person appointed by another's last will and testament, to have the execution of the same after his decease, and the disposing of the testator's goods and effects, according to the intent of the will.

EXECU'TORY, in law, signifies that which is to take effect on a future contingency; as an *executory* devise or remainder.

EXCHEQUER BILLS WERE INVENTED AND FIRST ISSUED IN 1696; AND WERE FIRST CIRCULATED BY THE BANK OF ENGLAND IN 1706.

SENTENCES OF EXCOMMUNICATION FROM ROME WERE FORBIDDEN TO BE USED IN ENGLAND, UNDER SEVERE PENALTIES, IN 1391.



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EXE'DRÆ, in antiquity, a general name for such buildings as were distinct from the main body of the churches, and yet within the limits of the consecrated ground.

EXEGE'SIS, a discourse intended to explain or illustrate a subject.

EXEM'PLAR, a pattern or model; the ideal model which an artist attempts to imitate.——That which serves as a model for imitation, or as a warning for others, is termed *exemplary*; as, *exemplary* justice; *exemplary* punishment.

EXEQUA'TUR, an official recognition of a person in the character of consul or commercial agent, authorizing him to exercise his powers.

EX'ERCISE, the exertion of the body, for health, amusement, labour, or the attainment of any art. Exercise increases the circulation of the blood, attenuates and divides the fluids, and promotes a regular perspiration, as well as a due secretion of all the humours; for it accelerates the animal spirits, and facilitates their distribution into all the fibres of the body, strengthens the parts, creates an appetite, and helps digestion. Whence it arises, that those who accustom themselves to exercise are generally very robust, and seldom subject to diseases. It should never be forgotten by those of studious habits, that the delicate springs of our frail machines lose their activity, and the vessels become clogged with obstructions, when we totally desist from exercise; from which consequences arise which necessarily affect the brain: a mere studious life is therefore equally prejudicial to the body and the mind. We may further observe, that an inclination to study ought not to be carried to the extent of aversion to society and motion. The natural lot of man is to live among his fellows; and whatever may be his situation in the world, there are a thousand occasions wherein his physical energies may be rendered serviceable to his fellow-creatures, as well as to himself. Many rational causes hate therefore given rise to the practice of particular exercises; and those legislators who deserve to be called the most sagacious and benevolent, have instituted opportunities for enabling youth who devote themselves to study, to become expert also in laudable exercises. "We shall walk, run, dance, swim, fence, sail, and ride to little purpose (says Dr. Tissot), unless we make choice of an agreeable friend to accompany us. Solitude is the bane of man; insomuch, that it is difficult to tell which suffers most, the soul in its qualities, or the body in its temperament, from being alone. Too great a concourse of people breeds disease. Too much company is destructive to cheerfulness. For the sake of both mind and body, therefore, we should move in a little circle, and let heaven circumscribe it for us."——*Mental exercise* is the exertion of the mind or faculties for improvement, as in the various branches of literature, art, and science.——*Military exercise* consists in the use of arms, in marches, evolutions, &c.——*Naval exercise* consists in the management of artillery, and in the evolutions of fleets.

EXER'GUE, a term used by medallists to denote the little space around and without the work or figures of a medal for an inscription, &c.

EXFOLIATION, in surgery, the scaling of a bone; the process of separating, as pieces of unsound bone from the sound part.——In mineralogy also, to *exfoliate* is to scale off or separate in thin laminæ.

EXHALA'TION, a general term for all effluvia or steams raised from the surface of the earth, in form of vapour.

EXHAUS'TION, in mathematics, a method of proving the equality of two magnitudes by a *reductio ad absurdum*, or showing that if one is supposed either greater or less than the other, there will arise a contradiction.

EXHEREDA'TION, in the civil law, a father's excluding a child from inheriting any part of his estate.

EXHIB'IT, any paper produced or presented to a court or to auditors, referees, or arbitrators, as a voucher, &c.——In chancery, a deed or writing produced in court and sworn to, and a certificate of the oath indorsed on it by the examiner or commissioner.

EXHIBI'TION, a public display of whatever is interesting either as a matter of art or curiosity. Also, a benefaction settled for the benefit of scholars in the universities, that are not on the foundation. The person receiving this is called an *exhibitioner*.——*Exhibition* was anciently an allowance for meat and drink, such as the religious appropriators made to the poor depending vicar.

EXHUMA'TION, the digging up of a dead body that has been interred.

EX'IGENT, in law, a writ or part of the process of outlawry. The *exigent* or *exigi facias* requires the defendant to be proclaimed in five county courts successively, to render himself; and if he does not, he is outlawed.

EX'ILE, a state of banishment or expulsion from one's country by authority; or it may be an abandonment of one's country, for a foreign land, from disgust or any other motive, which is called *voluntary exile*.

EXISTENCE, the state of being, or having an actual essence. Mr. Locke says, that we arrive at the knowledge of our own existence, by intuition; of the existence of God, by demonstration; and of other things, by sensation. As for our own existence, continues he, we perceive it so plainly, that it neither needs, nor is capable of, any proof. I think, I reason, I feel pleasure and pain; can any of these be more evident to me than my own existence? If I doubt of all other things, that very doubt makes me perceive my own existence, and will not suffer me to doubt. If I know I doubt, I have as certain a perception of the thing doubting, as of that thought which I call doubt: experience then convinces us, that we have an intuitive knowledge of our own existence.



REAL CRIMINALS ARE AT PRESENT SELDOM EXILED, AS IT IS UNJUST TO LET LOOSE OUR OFFENDERS UPON NEIGHBOURING STATES.

THE ANCIENT REPUBLICS SOMETIMES EXILED MEN ON MERE SUSPICION THAT THEY MIGHT BECOME DANGEROUS TO REPUBLICAN LIBERTY.

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**EX'IT**, a departure; a term used to denote the action of quitting the stage by a player after he has performed his part. Figuratively, the act of quitting this mortal existence.

**EXOCŒ'TUS**, or Flying-fish, in ichthyology, a genus of fishes, of which there are three species. The *Exocœtus exiliens*, or the Mediterranean flying-fish, is about fourteen inches in length, and found principally in the Mediterranean and Atlantic seas, frequently alone, and sometimes in small companies. By the extraordinary length of its pectoral fins it is enabled to quit the water and support a flight, about three feet above the surface, for the distance of 80 or 100 yards; after which it is obliged to return to the water and moisten its fins, which even in this short progress become hard and dry. The fishes are persecuted by the dorado under the water, and by the gull or albatross above its surface, and thus often escape destruction by the one only to incur it from the other.

**EXO'DIA**, amongst the Romans, were a sort of after-pieces, performed by young gentlemen when the play was concluded. They bore no relation to the drama before exhibited; but were intended to revive, or rather improve the Fescennine verses, which had fallen into disuse. Professional actors never performed any part in the *Exodia*.

**EX'ODUS**, a canonical book of the Old Testament; being the second of the Pentateuch, or five books of Moses. It contains a history of the departure of the children of Israel from Egypt; from which it received its name.

**EX'ODE**, in the Greek drama, the concluding part of a play, or that part which comprehends all that occurs after the last interlude.

**EX OFF'ICIO**, in law, the power a person has, by virtue of his office, to do certain acts without special authority.——*Ex-officio informations* are prosecutions commenced at the suit of the king, in cases of such great danger, as that the safety of the state might be involved by waiting for the usual course of law.

**EX'OGLOSS**, a genus of fishes found in the American seas, whose lower jaw is trilobed, and the middle lobe protruded serves as a tongue.

**EXOM'PHALOS**, in surgery, a rupture of the navel.

**EX'ORCISM**, the expulsion of evil spirits from persons or places by certain adjurations and ceremonies. Exorcism makes a considerable part of the superstition of the church of Rome, the rituals of which forbid the exorcising any person without the bishop's leave.——From many passages in Irenæus, Origen, Epiphanius, and Josephus, it is evident that the Jews about our Saviour's time, pretended to a power of casting out devils, by some arts or charms derived from Solomon. For a further proof of their pretensions in this respect, see Acts xix. 13, Mark ix. 38, Luke ix. 59. Exorcists in the ancient christian church, were employed in casting out demons, and were ordained for that express purpose.

**EX'ORCIST**, one who by prayers and incantations professes to cast out evil spirits.

**EXOR'DIUM**, in rhetoric, the commencement of a speech, serving to prepare the audience for the main subject. It may be formal and deliberate, or abrupt and vehement, according to the nature of the subject and occasion.

**EXOS'TOSIS**, in surgery, a preternatural eminence or excrescence of a bone, whether attended with an erosion or not.

**EXOS'TRA**, in antiquity, a bridge thrust out of a turret by pullies on the walls, by which the besiegers gained an entrance into the town.

**EXOTER'ICÆ**, in rhetoric, a term applied to such of Aristotle's lectures as were open to all persons.

**EXOT'IC**, an appellation for the produce of foreign countries. Exotic plants are such as belong to a soil and climate entirely different from the place where they are raised, and therefore can be preserved for the most part only in green-houses.

**EXPANSIBIL'ITY**, the capacity for extension in bulk or surface.

**EXPAN'SION**, in natural philosophy, the enlargement or increase of bulk in bodies, chiefly by means of heat. This is one of the most general effects of caloric, being common to all bodies whatever, whether solid or fluid, or in an aeriform state. In some cases bodies seem to expand as they grow cold, as water in the act of freezing; this, however, is known to be no exception to the general rule, but is owing to the arrangement of the particles, or to crystalization, and is not a regular and gradual expansion like that of metals, or other solid substances, by means of heat. In various metals likewise an expansion takes place in passing from a fluid to a solid state, which is accounted for in the same way. The degree of expansion produced in different liquids, varies very considerably. In general, the denser the fluid, the less the expansion: water expands more than mercury; and alcohol, which is lighter than water, expands more than water. The expansion of aeriform fluids may be exhibited by bringing a bladder, partly filled with air, and the neck closely tied, near the fire; the bladder will soon be distended, and, if the heat be strong enough, will burst.——We also apply the word *expansion* to surface, as the expansion of a sheet of water, but not to a line or length without breadth.

**EX-PARTE**, in law, on one side, as *ex parte* statement, a partial statement, or that which is made on one side only.

**EXPATRIATION**, the forsaking one's own country, with a renunciation of allegiance, and with a view of becoming a permanent resident and citizen in another country.

**EXPECTANT**, in law, an epithet for whatever has a relation to, or dependence upon another.

**EXPECTANCY**, in law, a state of waiting or suspension. An *estate in expectancy* is one which is to take effect or commence after the determination of another estate.



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Estates of this kind are *remainders* and *reversions*.

EXPECTA'TION, in the doctrine of chances, is applied to any contingent event, upon the happening of which some benefit is expected.——*Expectation* differs from *hope* in this: hope originates in desire, and may exist with little or no ground of belief that the desired event will arrive; whereas expectation is founded on some reasons which render the event probable.——*Expectation*, of life, is a term used to express the number of years, which, according to the experience of bills of mortality, persons at any age may be expected to live.

EXPECTORANTS, those medicines which promote expectoration, or a discharge of mucus from the trachea and lungs.

EXPE'DIENT, a temporary means of effecting an object, without regard to ulterior consequences.

EXPED'ITATE, in the English forest laws, is to cut out the balls or claws of a dog's fore-feet, for the preservation of the royal game.

EXPEDI''TION, the march of an army, or the voyage of a fleet, to a distant place, for hostile purposes; as, the *expedition* of the English to Holland; the *expedition* of the French to Egypt.

EXPE'RIENCE, the source of knowledge arising from the faculty of memory, and the power of reasoning by analogy. Thus, we learn the instability of human affairs by observation or by *experience*.

EXPER'IMENT, an act or operation designed to discover some unknown truth, principle, or effect.——In chemistry, a trial of the results of certain applications and motions of natural bodies, in order to discover something of their laws, nature, &c.——*Experimental* knowledge is the most valuable, because it is most certain, and most safely to be trusted.

EXPERIMENTAL PHILOSOPHY, those branches of science, the deductions in which are founded on experiment, as contrasted with the moral, mathematical, and speculative branches of knowledge. The principal experimental science is Chemistry: but there are many others, as, Optics, Pneumatics, Hydrostatics, Electricity, Magnetism, &c.

EXPERIMEN'TUM CRU'CIS, a leading or decisive experiment.

EXPIATION, a religious ceremony, by which satisfaction is made for sins of omission or commission, accidental or intentional. The chief mode of expiation among the Jews and Pagans was by sacrifice.——*Expiation*, in a figurative sense, is applied by divines to the pardon procured to men's sins, by the obedience and death of Christ.

EXPIRA'TION, in anatomy, that part of respiration which consists in expelling the air out of the lungs.

EXPLO'SION, in natural philosophy, a sudden and violent expansion of an aerial, or other elastic fluid, by which it instantly throws off any obstacle that happens to be in the way, sometimes with incredible force, and in such a manner as to produce the most astonishing effects. It differs from mere expansion, by being sudden and violent, while the latter acts gradually and uniformly for some time.

EXPO'NENT, in algebra, the number or figure which, placed above a root at the right hand, denotes how often that root is repeated, or how many multiplications are necessary to produce the power.——*Exponential curves* are such as partake both of the nature of algebraic and transcendental ones.

EXPORTA'TION, that part of foreign commerce which consists in sending out goods for sale, and which is therefore the *active* part of trade, as importation, or the purchasing of goods is the passive.——We apply the word *exports* to goods or produce which are sent abroad or usually exported.

EXPOSITOR, one who explains the writings of others; it is applied particularly to those who profess to expound the Scriptures.

EX POST FACTO, (literally, from something done afterwards), as an *ex post facto* law, a law which operates upon a subject not liable to it at the time the law was made.

EXPOSTULA'TION, in rhetoric, a warm address to a person, who has done another some injury, representing the wrong in the strongest terms, and demanding redress.

EXPRESS', a messenger or courier sent to communicate information of an important event, or to deliver important dispatches.

EXPRESS'ED OILS, in chemistry, such oils as are procured from any substance by simple pressure, as the oil of almonds, &c.

EXPRES'SION, in painting, the distinct and natural exhibition of character or of sentiment in the characters represented. The term expression is frequently confounded with that of passion, but they differ in this, that *expression* is a general term, implying a representation of an object agreeably to its nature and character, and the use or office it is to have in the work; whereas *passion*, in painting, denotes a motion of the body, accompanied with certain indications of strong feeling pourtrayed in the countenance; so that every passion is an expression, but not every expression a passion.——*Expression*, in rhetoric, the elocution, diction, or choice of words suited to the subject and sentiment.——In music, the tone and manner which give life and reality to ideas and sentiments.——*Theatrical expression*, is a distinct, sonorous, and pleasing pronunciation, accompanied with action united to the sentiment

EXPROPRIA'TION, the surrender of a claim to exclusive property.

EXPUI''TION, in medicine, a discharge of saliva by spitting.

EXPURGA'TORY, serving to purify from anything noxious or erroneous; as the *expurgatory* index of the Romanists, which directs the expunction of passages of authors contrary to their creed or principles.

EXSAN'GUIOUS, an epithet for animals which are destitute of red blood.



THE EXPLOSIVE FORCE OF A VOLCANO IS SOMETIMES SUCH AS TO THROW A STONE OF TWO HUNDRED TONS A DISTANCE OF EIGHT MILES.

THE FORCE OF AN EXPLOSION DEPENDS ON THE QUANTITY OF THE ELASTIC FLUID, AND THE VELOCITY IT ACQUIRES BY HEAT.

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EXSICCA'TION, the act of drying, or the evaporation of moisture.

EXSTIP'ULATE, in botany, an epithet for plants which have no stipulus.

EXSUDATION, in medicine, a discharge of humours or moisture from animal bodies, by sweat or extillation through the pores.

EX'TANT, an epithet for anything which still subsists or is in being; as a part only of the writings of Cicero are *extant*.

EXTEM'PORE, without previous study or meditation; as he writes or speaks *extempore*. Though an adverb, it is often unnecessarily and improperly used as an adjective; as an *extempore* sermon, instead of an *extemporary* or *extemporaneous* sermon, &c. ——To *extemporize* well, requires a ready mind well furnished with knowledge.

EXTEN'SION, in philosophy, one of the common and essential properties of body, or that by which it occupies some part of universal space.

EXTEN'SOR, in anatomy, an appellation given to several muscles, from their extending or stretching the parts to which they belong.

EXTENT', in *law*, is used in a double sense; sometimes it signifies a writ or command to the sheriff for the valuing of the lands or tenements of a debtor; and sometimes the act of the sheriff, or other commissioner, upon this writ; but most commonly it denotes an estimate or valuation of lands. ——*Extent in aid*, a seizure made by the crown, when a public accountant becomes a defaulter, and prays for relief against his creditors.

EXTENUATION, the act of representing anything less faulty or criminal than it is in fact; it is opposed to *aggravation*.

EXTIN'GUISHMENT, in law, the annihilation of an estate, &c. by means of its being merged or consolidated with another.

EXTORTION, the unlawful act of any person in authority, who by colour of his office, takes money or any other thing when none is due. Whenever property of any kind is wrested from a person by menace, duress, violence, authority, or by any illegal means, it is *extortion*. The word *extort* has a very wide signification. Conquerors *extort* contributions from the vanquished; officers often *extort* illegal fees; confessions of guilt are *extorted* by the rack; promises which men are unable to perform are sometimes *extorted* by duress, &c.

EXTRA, a Latin preposition denoting beyond or excess; as *extra-work*, *extra-pay*, &c. It serves as a prefix to numerous English words.

EXTRACT, in literature, some select matter or sentence taken from a book. ——In law, a draught or copy of a writing.——In chemistry, the purer parts of any substance extracted from its grosser parts by means of decoction, and formerly also by distillation, until they were of the consistence of paste.——*Extractive principle*, a peculiar principle supposed to form the basis of all vegetable *extracts*.

EXTRAFOLIA'CEOUS, in botany, an epithet for that which grows on the outside of a leaf.

EXTRAJUDI'CIAL, out of the ordinary course of legal proceedings.

EXTRAMUN'DANE, beyond the limit of the material world.

EXTRAORDINA'RII, in Roman antiquity, a chosen body of men consisting of a third part of the foreign horse, and a fifth of the foot, which was separated from the rest of the forces borrowed from the confederate state, with great policy and caution; to prevent any design that they might possibly entertain against the natural forces.

EXTRAVAGAN'ZA, in music, the Italian for a kind of composition remarkable for its wildness and incoherence.——Irregular dramatic pieces, generally of the burlesque cast, are also sometimes called extravaganzas.

EXTRAVASATION, in contusions and other accidents of the cranium, is when one or more of the blood-vessels distributed on the *dura mater* are broken, whereby there is such a discharge of blood as oppresses the brain, frequently bringing on violent pains, and at length death itself, unless the patient is timely relieved.

EXTRE'ME, the utmost point, or furthest degree; as the *extremes* of heat and cold; the *extremes* of virtue and vice.——In logic, the extreme terms of a syllogism are the predicate and subject. Thus, "Man is an animal: Henry is a man, therefore Henry is an animal;" the word animal is the greater extreme, Henry the less extreme, and man the medium.——In mathematics, the *extremes* are the first and last terms of a proportion.

EXTREMI'TY, in its primary sense, signifies the utmost point or border of a thing. It also denotes the highest or furthest degree; as the *extremity* of pain or suffering; or the Greeks have endured oppression in its utmost *extremity*.—— In painting and sculpture, the *extremities* of the body, are the head, hands, and feet.—— In anatomy, this term is applied to the limbs, as distinguishing them from the other divisions of the animals, the head and trunk. The extremities are four in number, divided, in man, into upper and lower; in other animals, into anterior and posterior. Each extremity is divided into four parts: the upper into the shoulder, the arm, the fore-arm, and the hand; the lower into the hip, the thigh, the leg, and the foot.

EXÚ'VIÆ, in natural history, the cast skins, shells, or coverings of animals.——In geology, the spoils or organic remains of animals found in the earth, supposed to be deposited there at the deluge, or in some great convulsion or change which the earth has in past periods undergone.

EY'AS, in ornithology, a young hawk just taken from the nest, not able to procure its own food.

EYE, in anatomy, the organ of sight, or that part of the body, whereby visible objects are represented to the mind. The eye-ball is the immediate agent in refracting the rays of light, and collecting them



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terial worlds: and the fabulist, whose object is not merely to render a truth perceptible by means of a fictitious action, chooses his characters from the brute creation.—Some fables are founded upon irony; some are pathetic; and some even aspire to the sublime: but, generally speaking, a fable should possess unity, that the whole tenor of it may be easily seen; and dignity, since the subject has a certain degree of importance.—We find that fables have been highly valued, not only in times of the greatest simplicity, but among the most polite ages of the world. Jotham's fable of the trees is the oldest that is extant, and as beautiful as any that have been made since. Nathan's fable of the poor man is next in antiquity, and had so good an effect as to convey instruction to the ear of a king. We find Æsop in the most distant ages of Greece; and in the early days of the Roman commonwealth, we read of a mutiny appeased by the fable of the belly and the members. To which we may add, that although fables had their rise in the very infancy of learning, they never flourished more than when learning was at its greatest height.——*Fable* is also used for the plot of an epic or dramatic poem, and is, according to Aristotle, the principal part, and, as it were, the soul of a poem. In this sense the fable is defined to be a discourse invented with art, to form the manners by instruction, disguised under the allegory of an action.

FAB'RIC, in general, denotes the structure or construction of anything; but particularly of buildings, as a church, hall, house, &c. It is also applied to the texture of cloths, or stuffs; as this is cloth of a beautiful *fabric*.

FAB'ULOUS AGE, that period in the history of every nation in which supernatural events are represented to have happened. The fabulous age of Greece and Rome is called also the *heroic* age.

FACA'DE (pron. *fasa'de*), in architecture, the front or external aspect of an edifice. As in most edifices only one side is conspicuous, viz. that which faces the street, and usually contains the principal entrance, this has been denominated, *par eminence*, the facade.

FACE, in anatomy, the front part of the head, and the seat of most of the senses, comprising the forehead, the eyes and eyelids, the nose, cheeks, mouth, and chin. The bones of the face are divided into those of the upper and under jaw: the upper consists of thirteen bones, and the under is formed of one bone. The muscles of the face are those of the eye-lid, eye-ball, nose, mouth, and lips. The human face is called the image of the soul, as being the place whence the ideas, emotions, &c. of the soul are chiefly set to view. Nor can it be denied that the character of each individual is often strongly marked by the conformation of the countenance: physiognomy, therefore, in a certain degree, always has existed: but the great question is, how far we can reduce our experience to certain rules. For our own parts, we believe that both physiognomists and phrenologists have carried their speculations to an absurd length. ——*Face*, among painters and artists, is used to denote a certain dimension of the human body, adapted for determining the proportion which the several parts should bear to one another: thus the different parts of the body are said to consist, in length, of so many *faces*.——We also use the word *face* in speaking of the surface of a thing, or the side presented to the view of a spectator; as, the *face* of the earth; the *face* of the sun; the *face* of a stone, &c.

FA'CETS, the name of the little faces or planes to be found in brilliant and rose diamonds.

FA'CIAL LINE OR ANGLE. These terms are used in describing the conformation that exists in the bones of the face, &c. and which so strikingly characterizes the varieties of the human race. On the relation of the jaw to the forehead is founded the *facial line*, discovered by Peter Camper. Suppose a straight line drawn at the base of the skull, from the great occipital cavity across the external orifice of the ear to the bottom of the nose. If we draw another straight line from the bottom of the nose, or from the roots of the upper incisor teeth to the forehead, then both lines will form an angle which will be more acute the less the shape of the face, in brutes, resembles that of men. In apes, this angle is only from 45° to 60°; in the orang-outang, 63°; in the skull of a negro, about 70°; in a European, from 75° to 85°. In Grecian works of statuary, this angle amounts to 90°: In the statues of Jupiter, it is 100°.

FA'CIES HIPPOCRATICA, in medicine, that death-like appearance which consists in the nostrils being sharp, the eyes hollow, the temples low, the tips of the ears contracted, the forehead dry and wrinkled, and the complexion pale or livid. It is so called from Hippocrates, by whom it has been so justly described in his prognostics.

FAC-SIM'ILE, an imitation of an original in all its traits and peculiarities. The object of fac-similes is various; but in all cases their perfect accuracy is indispensable.

FAC'TION, a party in political society, combined or acting in union, in opposition to the prince, government, or state; usually applied to a minority, but it may be applied to a majority. Rome was almost always disturbed by factions; and the best interests of Britain are at this hour woefully neglected, owing to the continual ferment into which the country is thrown by different factions.

FACTI'TIOUS, in chemistry, &c., any epithets for what is made by art, in distinction from what is produced by nature; as, *factitious* cinnabar: *factitious* air.

FAC'TOR, in commerce, an agent or correspondent residing in some remote part, commissioned by merchants to buy or sell goods on their account, to negociate bills of exchange, or to transact other business for them. It is universally held in courts





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of law and equity, that the principal is held liable for the acts of his agent, provided that the conduct of the latter be conformable to the common usage and mode of dealing; but an agent cannot delegate his rights to another so as to bind the principal, unless expressly authorised to nominate a sub-agent. (For more special information on this important subject, see the act 5 Geo. IV. c. 94.)——*Factor*, in arithmetic, a name given to the multiplier and multiplicand, because they constitute the product: thus 4 and 5 are the factors of 20. Also an algebraic term, answering to the divisor in arithmetic.——Establishments for trade, in foreign parts of the world, are called *factories*.——The word *factory* is now also used for a manufactory on an extensive scale.

FAC'TORAGE, the allowance or percentage given to factors by the merchants and manufacturers, &c. who employ them; and which is usually fixed by special agreement between the merchant and factor.

FAC'ULÆ, in astronomy, a name given to certain bright spots in the sun.

FAC'ULTY, a term used to denote the powers or capacities of the human mind, viz. understanding, will, memory, imagination, &c.——If it be a power exerted by the body alone, it is called a *corporeal* or animal faculty; if it belong to the mind, it is called a *rational* faculty. And it may further be distinguished into the *natural* faculty, or that by which the body is nourished; and the *vital*, or that by which life is preserved, &c.——*Faculty*, a term applied to the different members or departments of an university, divided according to the arts and sciences taught there. In most universities there are four faculties; of arts, including humanity and philosophy; of theology; of physic; and of civil law. The degrees in the several faculties of our universities are those of bachelor, master, and doctor.——*Faculty*, in law, a privilege granted to a person, by favour and indulgence, of doing that which, by the strict letter of the law, he ought not to do.——*Faculty of Advocates*, a term applied to the college or society of advocates in Scotland, who plead in all actions before the court of session, justiciary and exchequer.

FÆCES, in chemistry, dregs, impurities, or sediment, that settles at the bottom after distillation, fermentation, &c.

FAGA'RA, in botany, a genus of plants, class 4 *Tetandria*, order 1 *Monogynia*. The species are shrubs.

FAGO'NIA, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The species are perennials.

FA'GUS, in botany, the beech-tree, a genus of the *monœcia* order of the *polyandria* class. It contains three species: of which the beech-tree rises to the height of 60 or 70 feet, and in stateliness and grandeur of outline vies with the oak. Its leaves are oval and serrated; its flowers are produced in globular catkins, and are succeeded by angular fruit, called *mast*, which, like acorns, serves as food for swine. Its bark has a peculiar silvery appearance, which, added to the gracefulness of its growth and the elegance of its foliage, renders it a beautiful object in forest scenery. Its wood is much employed in turnery, and for chairs. The chesnut-tree, another species, often grows to a vast size, and was formerly much used for the purposes of building. It is now used for liquor casks and other purposes; and its fruit is valuable for swine and deer.

FAH'LERZ, in mineralogy, gray copper ore; sometimes called tetrahedral copper pyrite.

FAH'LUNITE, in mineralogy, a subspecies of octahedral corundum.

FAIENCE, or IMITATION PORCELAIN, a kind of pottery, superior to the common sorts in its glazing, beauty, of form, and richness of painting. It derived its name from the town of Faenza, in Romagna, where it is said to have been invented in 1299. It reached its highest perfection in the 16th century; and some pieces were painted by the great artists of the period, which are highly valued as monuments of early art.

FAINTS, (in the distillation of whiskey) the weak spirituous liquor that runs off from the still after the proof spirit is taken away. This crude spirit is much impregnated with fetid essential oil, and is therefore very unwholesome.

FAIR, a kind of market, on a most extensive scale, granted to a town, by privilege, for the more speedy and commodious providing of such things as the place stands in need of. It is incident to a fair, that persons shall be free from being arrested in it for any other debt contracted than what was contracted in the same; or, at least, promised to be paid there. The most important fairs now held are probably those of Germany, and particularly the Leipsic fairs, where books form so important a branch of its commerce. But neither at home nor abroad can they have the importance they formerly had, because the communication between different parts of a country has become so easy, that merchandize may now be readily obtained direct from the places where it is produced or manufactured. It cannot have escaped general observation, that many fairs are held on church holidays; which is thus accounted for: Gregory the Great, in order to render popular the festival of the patron saints of churches, encouraged the people, on the day of the festival, to erect booths of branches about the church, and to feast therein, and amuse themselves with innocent pastimes. This custom was introduced into England from the continent, and must have been equally familiar to the Britons and Saxons, being observed among the churches of Asia and Europe in the sixth century, and by those of Western Europe in the seventh. As the people resorted in crowds to the festival, a considerable provision would be naturally required for their entertainment. The prospect of interest invited the little traders of the country to



THE THREE LEIPSIC FAIRS, VIZ. NEW-YEAR'S FAIR, EASTER FAIR, AND ST. MICHAEL'S FAIR, EACH LASTS THREE WEEKS.

THE CITY OF DELFT, IN HOLLAND, WAS AT ONE TIME FAMOUS FOR THE MANUFACTURE OF "FAIENCE," CALLED ALSO DELFT WARE.

come with their wares; thus, among the many pavilions for hospitality in the neighbourhood of the church, various booths were erected for the sale of commodities. Basil expressly mentions the numerous appearance of traders at these festivals in Asia; and Gregory notes the same custom to be common in Europe. And, as the festival was observed on a *feria*, or holy-day, it as naturally assumed to itself, and as naturally communicated to the mart, the appellation of *feria*, or *fair*. [By the act 3 Geo. IV. c. 55, it is ordered, that at all fairs held within ten miles of Temple-bar, business and amusements of all kinds shall cease at 11 o'clock in the evening; and not recommence before 6 o'clock in the morning, under a penalty of 40*s.* to be paid by any master, mistress, or other person, having the care or management of any house, shop, room, booth, standing, &c.]

FAI'RY, an imaginary spirit or being. Fairies were supposed to assume a human form, though they were of an extremely diminutive size, and distinguished by a variety of fantastical actions, good or bad, but never failing to exercise a magic power over mortals. In an age of ignorance, the imagination easily substitutes a poetical mythology in the place of natural causes. The native land of this fairy mythology is Arabia, from whence it was brought to Europe by the Troubadours. The European name *fairy* comes from *fatum*, fate. The Italians still call a fairy, *fata*; and they are often mentioned in the traditions of the Italians, who, as well as the Arabians, had stories of a country inhabited by fairies. After the introduction of them into the romances of Europe, the notion of fairies quickly spread; and the tales of their doings were so fixed in the popular belief, that they were continually seen in ruined castles, or gamboling in the forests by moonlight, &c., so that they did not appear at all extraordinary or unnatural when brought upon the stage by Shakspeare. For a long time *fairy tales* were fashionable; but they multiplied so fast, and occupied so much space in the lighter literature of the day, that satiety produced disgust, and they were at length irrevocably consigned to the nursery.——*Fairy of the mine*, an imaginary being supposed to inhabit mines, wandering about in the drifts and chambers, always employed, yet effecting nothing. —— *Fairy ring or circle*, a phenomenon frequently seen in the fields, consisting of a round bare path with grass in the middle, formerly ascribed to the dances of the fairies. It has been supposed by some, that these rings are the effect of lightning; but a more rational theory ascribes them to a kind of fungus which grows in a circle from the centre outwards, destroying the grass as it extends, while the interior of the circle is enriched by the decayed roots of the fungi.

FAFRY-STONE, the fossil echinite, abundant in chalk-pits.

FAITH, in divinity and philosophy, the firm belief of certain truths upon the testimony of the person who reveals them. The grounds of a rational faith are, that the things revealed be not contrary to, though they may be above natural reason; that the revealer be well acquainted with the things he reveals; that he be above all suspicion of deceiving us. Where these criterions are found, no reasonable person will deny his assent. Whatever propositions, therefore, are beyond reason, but not contrary to it, are, when revealed, the proper matter of faith.——*Justifying, or saving faith*, signifies perfect confidence in the truth of the Gospel, which influences the will, and leads to an entire reliance on Christ for salvation.—— *Public faith*, is represented on medals sometimes with a basket of fruit in one hand, and some ears of corn in the other; and sometimes holding a turtle-dove. But the most usual symbol, is with her two hands joined together.

FA'KIR, or FA'QUIR, a devotee, or Indian monk. The fakirs are a kind of fanatics in the East Indies, who retire from the world, and give themselves up to contemplation. Their great aim is to gain the veneration of the world by their absurd and cruel penances, outdoing even the mortifications and severities of the ancient Christian anchorets. Some of them mangle their bodies with scourges and knives; others never lie down; and others remain all their lives in one posture. There is also another kind of fakirs, who do not practise such severities, but make a vow of poverty, and go from village to village, prophesying and telling fortunes.

FALCA'DE, in horsemanship, is when the horse throws himself upon his haunches, as in very quick curvets.

FAL'CATED, an epithet for any thing in the form of a sickle: thus, the moon is said to be *falcated* when she appears horned, or in the shape of a sickle.

FAL'CHION, a kind of sword turned up somewhat like a hook.

FAL'CIFORM PROCESS, in anatomy, a process of the *dura mater*, in the form of a *falx*, or sickle, that separates the two hemispheres of the brain.

FALCINEL'LUS, in ornithology, a bird supposed to be of the heron kind, with a long crooked bill; called by some the black heron. It is somewhat larger than a pigeon, and is of a greenish colour, variegated with purple.

FAL'CO, in ornithology, a genus of birds, of the order of the *Accipitres*, which have three toes always before, and only one behind. This genus comprehends the eagle, osprey, hawk, gyr-falcon, buzzard, kite, kestril, &c. For the most part they are rapacious tribes, and feed on putrefied carcases; yet seldom, and never but when pressed by extreme hunger, attack living animals. They are bold, and fly with great speed when high in the air, but slowly in its lower regions; have an exquisite sense of smell, and are very quick-sighted, they are not gregarious, but generally build their nests in clefts of impending rocks.

FAL'CON, a bird nearly allied to the





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hawk, about the size of a raven, and capable of being trained for sport, in which it was formerly much employed. It is usually represented in coats of arms with bells on its legs, and also decorated with a hood, virols, rings, &c.

FAL'CONET, a small cannon, or piece of ordnance.

FAL'CONRY, the art of training all kinds of hawks, but more especially the larger sort, called the gentle falcon, to the exercise or sport of hawking. This sport was much practised in Europe and Asia in the chivalric ages, and continued in favour till the 17th century; but the invention of fire-arms gradually superseded it. In France, England, and Germany, falconry was at one time in such high esteem, that during the reign of Francis I. of France, his grand falconer received an annual revenue of 4000 livres; had under him fifteen noblemen and fifty falconers; and enjoyed the privilege of hawking through the whole kingdom at pleasure. The whole establishment, which cost annually about 40,000 livres, attended the king wherever he went, and those who were distinguished for their skill in the sport were loaded with royal favours. In England, falconry was also in high esteem, and there is to this day an hereditary grand falconer (the duke of St. Alban's), who, by virtue of his office, presents the king, or queen regnant, with a cast of falcons on the day of the coronation. A similar service is performed by the representative of the Stanley family in the Isle of Man. In our old books on the art of hawking, it is quite laughable to see what minute directions are given for training and attending to the falcon; and were the subject worthy of the space it would occupy, we should be tempted to copy some of them. In Persia, falcons not only attack all kinds of birds, but even gazelles. They are taught to fasten themselves on the heads of these creatures, and to peck at their eyes, which checks them until the hounds come up. In this way wolves were formerly hunted in Europe. After a long course of training, so as to increase their natural courage and ferocity, they were taken into the field, capped or hooded, so as to see no object but their game; and as soon as the dogs stopped or sprung it, the falcon was unhooded, and tossed into the air after his prey.

FALD'AGE, a privilege which certain lords anciently reserved to themselves of setting up folds for sheep in any fields within their manors, the better to manure them.

FALLING STAR, in meteorology, a phenomenon that is frequently seen, and which has been usually supposed to depend on the electric fluid. Sir Humphry Davy, however, in a lecture delivered at the Royal Institution, gave many reasons against this opinion, and conceived that they are rather to be attributed to falling stones; remarking, that when their appearance is frequent, they have all the same direction. This phenomenon has recently attracted an unusual degree of attention, and given rise to many communications from scientific men in different parts of the world; so much so, indeed, that we cannot hesitate to give, at some length, such observations on them as appear to convey a familiar and pleasing description of them. We must at the same time premise that the observations made have led to different conclusions, and that no well-established theory has sprung from them. After noticing their periodical return for several years on the nights of the 12th and 13th of November, which had also been simultaneously observed from various distant points of the earth; Dr. Olbers came to the conclusion, that they are heavenly bodies of inconsiderable dimensions, but which in common with all others of a similar nature, have a regular motion. And it is inferred that the remarkable and very unequal distribution of those small bodies revolving round the sun, which form the fire-balls and shooting-stars of our planetary system, as well as the general resemblance and nearly similar nature of all the meteoric stones which fall from time to time (taking into consideration both their external characters, and also their chemical composition), seem to indicate, not only that they have one common origin, but also that it was one common cause which has thus hurled them into space. But, in reference to this theory, it has very naturally been asked, how is it that they become ignited? and how is it that in the extremely rare medium in which they move, they continue glowing, or indeed, burning with such brilliancy?—We now come to a description of the falling stars or asteroids, observed Nov. 12, 1833, by Mr. R. C. Woods, who stationed himself at Richmond, Surrey, for the purpose of observing that phenomenon: In the afternoon of the 12th, the sun sank below the horizon, so as to predicate a clear night, there being a rich profusion of red, orange, and rosy-coloured lines. From 12 o'clock (midnight, 12th) till 25 minutes past 3 on the 13th, nine meteors fell, crossing the Milky Way at angles of from 70 to 80 degrees; six were without trains, and three with trains. At 35 minutes past 3, nothing could exceed the beauty and grandeur of the heavens; from E.N.E. to N., meteors fell like a shower of bomb-shells in a bombardment, and in such rapid succession as to defy every attempt to watch their particular direction and course among the stars, or to ascertain their number. The whole visible heavens were illuminated by the light such a prodigious number of meteors diffused in their descent towards the earth, and a more beautiful and magnificent sight cannot possibly be conceived. At 55 minutes past 3 the 'shower' ceased, and after 4 o'clock all traces of meteors were gone; the stars however, shone without diminution in number or brightness, and the atmosphere was remarkably clear. ——We see by an article in the Vienna Official Gazette, that a similar observation was made in Germany at the same time by M. Karl Von Littrow, who says, "On the 11th of November, during five hours after six in the

IN FEUDAL TIMES SOME VASSALS WERE BOUND TO APPEAR ANNUALLY WITH A WELL-TRAINED FALCON AND A PROPER DOG.

FALCONRY IS INCONTESTABLY THE GREATEST CONCERN OF MANKIND, AND FROM ITS DISCOVERY MAIN PARTS OF MODERN TIMES, AND DESERVES TO BE



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evening, the sky being clear, we counted about twenty falling stars in an hour, so that the phenomenon was increasing. On the 12th of November, the sky being quite cloudy, no observation of the kind could be made. On the 13th of November, the sky suddenly cleared up half an hour before midnight, and remained perfectly serene till day-break. During these six hours we noted 1002 falling stars, of which by far the greater part was of the first magnitude, with a long horn of light, and casting much shade, like the moon. The phenomenon decidedly increased from the beginning of the observation till about four in the morning, when it seemed to have reached its culminating point."——That this phenomenon has not decreased, is evident from the following account which appeared in the Paris journals during August, 1839: "Letters from various parts of France inform the Academy of Sciences that the phenomenon exhibited itself with more or less splendour on the nights of the 9th to the 11th of August. Everywhere the same direction from the north-east to the south-west has been remarked. At Paris, for instance, astronomers have ascertained that the average number of shooting stars which on other days scarcely exceed eight in an hour, amounts to twenty-five, thirty, forty, and even fifty in the same lapse of time. The height at which they are is considerable; calculations combined with observation carrying it sometimes to sixty leagues; as for their rapidity it is between eight and twenty-two leagues per second. Several of those fine meteors, after kindling in their fall, re-ascended as if they had been driven back by a fluid of a certain density."——Though we have already, perhaps, given to this article undue space, considering our limits, there is something so graphic in the following account, which we copy from a newspaper dated Sept. 8, 1839, that we cannot resist the opportunity of giving it to our readers:—"Between the hours of ten on Tuesday night and three on Wednesday morning, in the heavens was observed one of the most magnificent specimens of those extraordinary phenomena the falling stars and northern lights ever witnessed for many years past. The first indication of the latter phenomenon was at about ten minutes before ten, when a light crimson, apparently vapour, rose from the northern portion of the hemisphere, and gradually extended to the centre of the heavens, and by ten o'clock, or a quarter past, the whole, from east to west, was one vast sheet of light. It had a most alarming appearance, and was exactly like that occasioned by a terrific fire. The light varied considerably; at one time it seemed to fall, and directly after rose with intense brightness. There were to be seen mingled with it volumes of smoke, which rolled over and over, and every beholder seemed convinced that it was "a tremendous conflagration." The consternation in the metropolis was very great, thousands of persons were running in the direction of the supposed awful catastrophe. The engines belonging to the Fire Brigade stations in Baker-street, Farringdon-street, Watling-street, Waterloo-road, and likewise those belonging to the West of England station—in fact, every fire-engine in London was horsed, and galloped after the supposed "scene of destruction," with more than ordinary energy, followed by carriages, horsemen, and vast mobs. Some of the engines proceeded as far as Highgate and Holloway before the error was discovered. These appearances lasted for upwards of two hours, and towards morning the spectacle became one of more grandeur. At two o'clock on Wednesday morning the phenomenon presented a most gorgeous scene, and one very difficult to describe. The whole of London was illuminated as light as noon day, and the atmosphere was remarkably clear. The southern hemisphere at the time mentioned, although unclouded, was very dark, but the stars, which were innumerable, shone beautifully. The opposite side of the heavens presented a singular, but magnificent contrast; it was clear to the extreme, and the light was very vivid; there was a continual succession of meteors, which varied in splendour. They apparently formed in the centre of the heavens, and spread till they seemed to burst; the effect was electrical, myriads of small stars shot out over the horizon, and darted with that swiftness towards the earth that the eye scarcely could follow the track; they seemed to burst also, and throw a dark crimson vapour over the entire hemisphere. The colours were the most magnificent that ever were seen. At half-past two o'clock the spectacle changed to darkness, which on dispersing, displayed a luminous rainbow in the zenith of the heavens and round the ridge of darkness that overhung the southern portion of the country. Soon afterwards columns of silvery light radiated from it; they increased wonderfully, intermingled amongst crimson vapour, which formed at the same time, and when at the full height the spectacle was beyond all imagination. Stars were darting about in all directions, and continued until four o'clock, when all died away. During the time that they lasted a great many persons assembled on the bridges across the river Thames, where they had a commanding view of the heavens, and watched the progress of the phenomenon attentively."

FALLING SICKNESS. [See EPILEPSY.]

FALLO'PIAN TUBES, in anatomy, two canals or ducts arising in the womb of a tortuous figure, but approaching to a conic form, joined to the fundus, one on each side. They received their name from Gabriel Fallopius, a celebrated Italian anatomist and physician of the 16th century, who is said to have first ascertained their use and office in the process of conception.

FAL'LACY, a logical artifice, or an argument framed so as to deceive; a sophism.

FAL'LOW, a term applied to land which is left uncultivated for one or more years,





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IN THE REIGN OF ELIZABETH, FANS WERE MADE OF OSTRICH FEATHERS, WITH CURIOUSLY-WROUGHT HANDLES OF GOLD, SILVER, OR IVORY.

with a view to exterminate weeds, and to enable it to fix those atmospherical elements which promote vegetable growth, and which are exhausted by repeated crops of the same kind. As a succession of the same crops tends to impoverish the soil, a rotation of different crops is necessary. Potatoes and grain are exhausting; but after them, the soil is ameliorated by tares, turnips, &c.

FAL'LOW DEER, in zoology, the *Cervus dama* of Linnæus, having horns branched, recurved, and compressed. This animal usually forms one of the ornaments of English parks.

FALSE, contrary to the truth or fact: the word is applicable to any subject physical or moral.——*False*, in music, an epithet applied by theorists to certain chords, because they do not contain all the intervals appertaining to those chords in their perfect state. Those intonations of the voice which do not truly express the intended intervals are also called *false*, as well as all ill-adjusted combinations.——*False*, an epithet used also in law, as *false imprisonment*, the trespass of imprisoning a man without lawful cause.——In mineralogy, as *false diamond*, a diamond counterfeited with glass.——It is also a word much used in military affairs; as, a *false* alarm, a *false* attack, &c.——*False flower*, in botany, a flower which does not seem to produce any fruit.——*False roof*, in carpentry, that part of a house which is between the roof and the covering.

FALSE'TO, in music, an Italian term, denoting that species of voice in a man, the compass of which lies above his natural voice, and is produced by artificial constraint.

FAMILIAR SPIRITS, demons, or evil spirits, supposed to be continually within call and at the service of their masters, sometimes under an assumed shape; sometimes compelled by magical skill, and sometimes doing voluntary service. In Eastern stories, nothing is more common than the mention of magic gems, rings, &c., to which are attached genii, sometimes good, sometimes bad; but in modern Christian Europe, the notion of *familiars* has always been restricted to evil spirits.

FAM'ILY, the collective body of persons who live in one house, under one head. Also the kindred or lineage of a person: thus the Israelites were a branch of the *family* of Abraham; and the descendants of Reuben, of Manasseh, &c. were called *families*.——*Family*, in natural history, any order of animals, or other natural production allied to each other by certain distinctive characteristics.——*Family of curves*, in mathematics, a congeries of several kinds of curves, all of which are defined by the same equation, but in a different manner, according to their different orders.

FANAT'IC, one who indulges wild and extravagant notions of religion, and sometimes exhibits strange motions and postures, and vehement vociferation in religious worship.——The ancients called those *fanatici* who passed their time in temples *(fana)*, and being often seized with a kind of enthusiasm, as if inspired by the divinity, exhibited wild and antic gestures. Prudentius represents them as cutting and slashing their arms with knives: shaking the head was also common among the *fanatici*; hence the word was applied to different religious sects who, on their first appearance amongst us, sought notoriety by the extravagance of their actions and by pretending to inspiration.

FANDAN'GO, an old Spanish dance, which proceeds gradually from a slow and uniform to the most lively motion. It is seldom danced but at the theatre, and in the parties of the lower classes; nor is it even then customary to dance it with those voluptuous looks and attitudes which distinguish the true fandango. There is another species of fandango, called the *bolero*, the motions and steps of which are slow and sedate, but grow rather more lively towards the end. In these dances the time is beat by castaneta.

FANFARE *(French)*, a short, lively, loud, and warlike piece of music, composed for trumpets and kettle-drums. Also, small, lively pieces, performed on hunting-horns, in the chase. From its meaning is derived *fanfaron*, a boaster, and *fanfaronade*, boasting.

FAN'-PALM, in botany, the *Corypha umbraculifera*, one of the most magnificent of trees, is a native of Ceylon, Malabar, and the East-Indies. It attains the height of 60 or 70 feet, with a straight, cylindrical trunk, crowned at the summit by a tuft of enormous leaves, which separate near the outer margin into numerous leaflets, and are usually 18 feet long, exclusive of the leaf-stalk, and 14 broad; a single one being sufficient to protect 15 or 20 men from the rain. When this palm (sometimes called the talipot-tree, or the great fan-palm) has reached the age of 35 or 40 years, it flowers —a long, conical, scaly spadix rising to the height of 30 feet from the midst of the crown of leaves, and separating into single alternate branches, which, at the base, extend laterally sometimes 20 feet, the whole covered with whitish flowers, and presenting a most beautiful appearance. The fruit is very abundant, globose, about an inch and a half in diameter, and requires 14 months to ripen, after which the tree soon perishes, flowering but once in the whole course of its existence. The Indians use the leaves for umbrellas, tents, or for covering their houses; the pith, after being pounded, is made into a kind of bread, which is of great use in times of scarcity.

FANTA'SIA, in music, the name generally given to a species of composition, supposed to be struck off in the heat of the imagination; and in which the composer is allowed to give free range to his ideas, unconfined by the rules of the science. Some limit the term to mere extemporaneous effusions, which are transitive and evanescent: differing from the *capriccio* in this, that though the latter is wild, it is the re-

"FAMILIARS" IN THE INQUISITION, WERE PERSONS WHO ASSISTED IN APPREHENDING THE ACCUSED, AND CONVEYING THEM TO PRISON.



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sult of premeditation, and becomes permanent; whereas the *fantasia* when finished, no longer exists.

FARCE, a dramatic piece or entertainment of low comic character. It was originally a droll, or petty shew exhibited by mountebanks and their buffoons in the open streets, to gather the people together. It has, however, long been removed from the street to the theatre; and instead of being performed by merry-andrews to amuse the rabble, is acted by comedians, and become the entertainment of a polite audience. As the aim of a farce is to promote mirth, the dialogue is not refined, nor is there any opportunity lost to excite laughter, however wild or extravagant the plot, or however ridiculous the characters.

FARE, money paid for the passage of a person in any vehicle, either by land or by water.

FARI'NA, in natural history, signifies literally meal or flour; but is also applied to the pulverulent and glutinous part of wheat, and other grain, before as well as after it has been ground.

FARI'NA FŒCUN'DANS, among botanists, the impregnating meal or dust on the apices or antheræ of flowers, which, being received into the pistil or seed-vessel of plants, fecundates the rudiments of the seeds in the ovary, which otherwise would decay and come to nothing. The manner of obtaining the farina of plants for microscopical observation is this: gather the flowers in the midst of a dry sun-shiny day, when the dew is perfectly off, then gently shake off the farina, or lightly brush it off with a soft hair-pencil, upon a piece of white paper; then take a single talc of isinglass between the nippers, and, breathing on it, apply it instantly to the farina, and the moisture of the breath will make that light powder stick to it. If too great a quantity is found adhering to the talc, blow a little of it off; and if there is too little, breathe upon it again, and take up more. When this is done, put the talc into the hole of a slider, and applying it to the microscope, see whether the little grains are laid as you desire, and if they are, cover them up with another talc, and fix the ring, but care must be taken that the talcs do not press upon the farina in such a manner as to alter the form.

FARM, a large portion of land, employed in the purposes of husbandry, and let on lease at a certain yearly rent. He who holds a farm and is a tenant or lessee thereof, is a *farmer*.——"*To farm*," in a general sense, is to hire at a fixed rent any post, situation, or property, from which larger but unfixed profits may be obtained; thus, one agreeing to pay a certain yearly sum, in consideration of receiving the tolls at a turnpike, is said *to farm* the turnpike.

FAR'RIERY, the art of preventing, or curing the diseases of horses. This is now called the *veterinary* art; and the smith whose business it is to shoe horses is denominated a farrier. Indeed, it is said by some, that they were originally called *ferriers*, from their working in iron, and that hence arose the word farrier, which, as they also undertook the management and cure of horses, designated their joint trade.

FAS'CES, in Roman antiquity, bundles of rods with an axe in the centre of each bundle carried before the consuls as a badge of their office. The use of the fasces was introduced by the elder Tarquin as a mark of sovereign authority: in after times they were borne before the consuls, but by turns only, each having his day. These latter had twelve of them, carried by so many lictors.

FAS'CIA, in architecture, any flat member having a considerable breadth and but a small projecture, as the band of an architrave, larmier, &c.——In anatomy, the name of any aponeurotic expansion of muscles which binds parts together.

FASCIA'LIS, in anatomy, an epithet for a muscle which moves the leg.

FASCIC'ULAR, in botany, an epithet for a root of the tuberous kind, with the knobs collected in bundles, as in Pœonia.

FASCIC'ULITE, in mineralogy, a variety of fibrous hornblend, of a fascicular structure.

FASCIC'ULUS, in medicine, denotes a handful, or according to some, as much as can be taken up between the finger and the thumb.——In botany, a species of inflorescence in which several upright approximating flowers are collected together.

FASCINATION, a kind of witchcraft or enchantment supposed to operate by the influence of the eye. The belief in fascination appears to have been very generally prevalent in most ages and countries. It has been till very recently, and in some remote districts is even yet, prevalent among the Scotch Highlanders, and the inhabitants of the Western islands, where the fear of the evil eye has led to various precautions against its influence; and in Turkey, when a child is born, it is immediately laid in the cradle and loaded with amulets, while the most absurd ceremonies are used to protect it from the noxious fascination of some invisible demon. Nay, the evil eye is there feared at all times, and supposed to affect persons of all ages, who, by their prosperity, may be the objects of envy.

FAS'CINES, in fortification, small branches, or bavins bound up in bundles, which are used in raising batteries, filling up the moat, binding the ramparts where the earth is bad, making parapets, &c.

FAS'CIOLA, in entomology, the Gourd Worm, or Fluke: a kind of flat worm often found in the intestines of animals.

FASHION-PIECES, in ships, the hindmost timbers which terminate the breadth, and form the shape of the stern.

FAS'SAITE, in mineralogy, a variety of augite, found in Fassa, in the Tyrol.

FASTI, in antiquity, the name of the Roman calendar, in which were set down all days of feasts, pleadings, games, ceremonies, the names of their officers, and other public concerns throughout the year.

FASTS, occasional abstinence from food, on days appointed by public authority to be

THE FARINACEOUS PART OF SEEDS IS CONVERTED INTO SACCHARINE JUICE BY THE VEGETABLE POWER OF DIGESTION.

THE POWER OF FASCINATION (OR OF STUPIFYING BY TERROR) IS POSSESSED BY SERPENTS, &C. OVER ANIMALS DESIGNED FOR THEIR PREY.



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THE PRINCIPAL AND MOST USEFUL VARIETIES OF FAT AND ANIMAL OILS, ARE SPERMACETI, TALLOW, LARD, AND THE BLUBBER OF WHALES.

observed in fasting and humiliation. Solemn fasts have been observed in all ages and nations, especially in times of mourning and affliction. Among the Jews, besides their stated fast days, they were occasionally enjoined in the time of any public calamity. They were observed upon the second and fifth days of the week, beginning an hour before sunset, and continuing till midnight on the following day. On these occasions they always wore *sackcloth* next their skins, rent their clothes, which were of coarse white stuff; sprinkled ashes on their heads; went barefoot; and neither washed their hands nor anointed their bodies as usual. They thronged the temple, made long and mournful prayers, and had every external appearance of humiliation and dejection. In order to complete their abstinence, at night they were allowed to eat nothing but a little bread dipped in water, with some salt for seasoning, except they chose some bitter herbs and pulse. Our Saviour, by condemning some abuses committed in fasting, plainly intimates that it is a duty, though he does not enjoin it.

FAT, in anatomy, an oleaginous matter, secreted from the blood, and filling up the cavity of the adipose cells. Its uses are, 1. to serve as a kind of covering to the body, in order to defend it from cold and other injuries; 2. to defend the more tender and sensible parts from being too strongly vellicated by the salts; 3. to preserve in good order the flexion of the muscles, of the cutis, and of the other parts between and about which it is placed; 4. to facilitate the motions of some parts, as the eyes, jaws, &c.; 5. to fill up a number of empty interstitial spaces, and by that meanp to add greatly to the symmetry and beauty of the parts, as is evidently the case in the face, the neck, &c.; and 6. to prevent the painful pressure and attrition of the parts, particularly in the soles of the feet, &c., where the fat is copiously disposed, and serves in the place of a cushion for the muscular flesh to rest upon. There is also great reason to suppose, that when the body does not receive nourishment in the usual way, the regress of the fat into the veins supplies that defect.——*Fats* vary in consistence, colour, and smell, according to the animals from which they are obtained; thus, they are generally fluid in the cetaceous tribes, soft and rank-flavoured in the carnivorous, solid and nearly scentless in the ruminants, usually white and copious in well-fed young animals, yellowish and more scanty in the old. Their consistence varies also according to the organ of their production; being firmer under the skin, and in the neighbourhood of the kidneys, than among the movable viscera. The animal oils and fats combine with the alkalies, and form with these perfect soaps. With some of the earths, and metallic oxydes also, they form saponaceous compounds; and they even facilitate the oxydation of some of the metals, as copper and mercury, by the atmospheric air. Animal fat is not homogeneous, but consists of two substances, *stearine* and *elaine*, the former of which is solid, the latter liquid, at common temperatures, and on the different proportions of which its degree of consistence depends.

FATALISM, the belief of an unchangeable destiny, to which every thing is subject, uninfluenced by reason, and independent of a controlling cause; the doctrine, in short, which teaches that all things take place by an inevitable necessity.

FATA MORGA'NA, a singular aerial phenomenon seen in the straits of Messina. This atmospherical refraction is not, however, altogether confined to that locality, it having occasionally been seen on our own coasts. But we will describe it as it there appears: "When the rising sun shines from that point whence its incident ray forms an angle of about 45° on the sea of Reggio, and the bright surface of the water in the bay is not disturbed either by the wind or current, when the tide is at its height, and the waters are pressed up by currents to a great elevation in the middle of the channel, the spectator being placed on an eminence, with his back to the sun and his face to the sea, the mountains of Messina rising like a wall behind it, and forming the back-ground of the picture,—on a sudden there appears in the water, as in a catoptric theatre, various multiplied objects—numberless series of pilasters, arches, castles, well-delineated regular columns, lofty towers, superb palaces, with balconies and windows, extended alleys of trees, delightful plains, with herds and flocks, armies of men on foot, on horseback, and many other things, in their natural colours and proper actions, passing rapidly in succession along the surface of the sea, during the whole of the short period of time while the above-mentioned causes remain. All these objects, which are exhibited in the Fata Morgana, are proved by the accurate observations of the coast and town of Reggio, by P. Minasi, to be derived from objects on shore. If, in addition to the circumstances we before described, the atmosphere be highly impregnated with vapour, and dense exhalations, not previously dispersed by the action of the wind and waves, or rarified by the sun, it then happens, that in this vapour, as in a curtain extended along the channel to the height of above forty palms, and nearly down to the sea, the observer will behold the scene of the same objects not only reflected from the surface of the sea, but likewise in the air, though not so distinctly or well defined as the former objects of the sea. Lastly, if the air be slightly hazy and opaque, and at the same time dewy, and adapted to form the iris, then the above-mentioned objects will appear only at the surface of the sea, as in the first case; but all vividly coloured or fringed with red, green, blue, and other prismatic colours."

ATMOSPHERICAL REFRACTION, SIMILAR TO THE FATA MORGANA, HAS AT TIMES APPEARED TO BRING THE FRENCH COAST CLOSE TO SUSSEX.

FATE, destiny depending on a superior cause and uncontrollable. According to the Stoics, every event is determined by Fate; and in the sense in which the mo-



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derns use the word, it implies the order or determination of Providence.

FATHER, in church history, is applied to ancient authors who have preserved in their writings the tradition of the church. Thus, St. Chrysostom, St. Basil, &c. are called Greek fathers, and St. Augustine and St. Ambrose Latin fathers. No author who wrote later than the 12th century is dignified with the title of *father*. It is also a title of honour given to prelates and dignitaries of the church, to the superiors of convents, to congregations of ecclesiastics, and to persons venerable for their age or quality. Thus, we say, "the right reverend *father* in God," "holy *father*," &c.——He who creates, invents, or composes anything; thus, God as creator is the *father* of all men; Jabal was the *father* of such as dwell in tents; Homer is considered as the *father* of epic poetry; a wise and affectionate king is called the *father* of his country, &c.——*Adoptive father*, he who adopts the children of another and acknowledges them as his own.——*Natural father*, the father of an illegitimate child.——*Putative father*, one who is only reputed to be the father.——*Father-in-law*, the father of one's husband or wife.——*Father-land*, the native land of of one's father or ancestors.

FATH'OM, a measure of six feet; used chiefly at sea in sounding the depth of water, measuring cordage, &c.

FAULTS, a term applied by miners to the fractures or interruptions in various strata.

FAUNA'LIA, three Roman festivals annually observed in honour of the god *Faunus*. The first was kept on the ides of February, the second on the 16th of the calends of March, and the third on the nones of December. The sacrifices on these occasions were lambs and kids. It is supposed that the Roman Faunus was the same with the Greek Pan.

FAUNS, rural deities, among the Romans, represented with horns on their heads, sharp pointed ears, and the rest of their bodies like goats. They were the mythological demi-gods of woods and forests, thence called *sylvan* deities.

FAUX JOUR, (French), *false light*; a term used in the fine-arts, signifying that a picture is placed so that the light falls upon it from a different side from that which the painter has represented the light in the picture as falling upon objects, or that it is covered with a bright glare, so that nothing can be properly distinguished.

FAVIS'S.E, large vaults under ground in the area of the Roman capitol, where the Romans carefully lodged and deposited with a degree of religious care the old statues, and other sacred utensils, when they happened to be broken: such a superstitious veneration did they pay to every thing belonging to the capitol.

FAWN, a young deer; a buck or doe of the first year.

FE'ALTY, in feudal law, an oath taken on the admittance of any tenant to be true to the lord of whom he held his land. Under the feudal system of tenures, every vassal or tenant was bound to be true and faithful to his lord, and to defend him against his enemies: the tenant was called a liege man; the land a liege fee; and the superior, a liege lord.

FEASTS, or FESTIVALS, in a religious sense, are anniversary times of feasting and thanksgiving, such as Christmas, Easter, &c. Feasts were of divine institution; intended by the Deity to perpetuate among his chosen people, the Jews, the memory of his mercies and miracles; as well as to keep alive the friendship betwixt the different tribes and families, by bringing them together on solemn occasions, and offering up their thanksgivings in the holy city.—— Among Christians, *movable feasts* are those which, depending on astronomical calculations, do not always return on the same days of the year. Of these, the principal is Easter, which fixes all the rest, as Palm-Sunday, Good Friday, Ash-Wednesday, Sexagesima, Ascension-day, Pentecost, and Trinity Sunday. *Immovable feasts*, those which are constantly celebrated on the same day; of these, the principal are Christmas-day; or the Nativity, the Circumcision, Epiphany, Candlemas or the Purification, Lady-day or the Annunciation, All Saints, and All-Souls, and the days of the several apostles. —The four quarterly feasts, or stated times whereon rent on leases is usually reserved to be paid, are Lady-day, or the annunciation of the Virgin Mary, on the 25th of March; the nativity of St. John the Baptist, on the 24th of June; the feast of St. Michael the arch-angel, on the 29th of September; and Christmas, or rather of St. Thomas the apostle, on the 21st of December.——The *feasts of the ancients* were conducted with great ceremony. The guests wore white garments, decorated themselves with garlands, and often anointed the head, beard, and breast with fragrant oils. The banqueting room was also often adorned with garlands and roses, which were hung over the table, as the emblem of silence: hence the common phrase, to communicate a thing *sub rosa* (under the rose). The luxurious Romans drank out of crystal, amber, and the costly *murra* (a kind of porcelain introduced by Pompey), as well as onyx, beryl, and elegantly wrought gold, set with precious stones. After the meal was ended, flute players, female singers, dancers and buffoons of all kinds, amused the guests, or the guests themselves joined in various sports and games.

FEATH'ER, a general name for the covering of birds; it being common to all of them to have their whole body, or the greatest part of it, covered with feathers or plumage. Feathers consist of a tube, a shaft, and barbs or vanes. The *tube* is a hollow, transparent, horny cylinder, constituting the root of the feather; the shaft is elastic, and contains a white, dry, and very light pith; and the *barbs* run in a uniform direction, broad on one side, narrow on the other, covering each side of the shaft. The feathers of birds are periodically changed, which





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is called *moulting*. When part of a feather is cut off, it does not grow out again; and a bird whose wings have been clipped, remains in that state till the next moulting season, when the old stumps are shed, and new feathers grow out.—When chemically analyzed, feathers seem to possess nearly the same properties with hair.—They may be considered as of four kinds: 1. quills, or the feathers of the wings; 2. those which cover the body; 3. the down which grows close to the skin; and 4. the long ones of the tail. Of the first description, the goose, the turkey, and the crow, supply those usually employed in writing. The down of the swan is sometimes made into muffs and other articles of dress. Goose feathers are most esteemed for beds, and they are best when plucked from the living bird, which is done thrice a-year, in the spring, midsummer, and beginning of harvest. The feathers of the eider-duck, called *eider-down*, possess in a superior degree all the good qualities of goose down, but it should only be used as a *covering* to beds, for by much pressure it loses its elasticity.——Feathers make a considerable article in commerce, particularly those of the ostrich, heron, swan, peacock, turkey, goose, and duck. They also afford a source of employment to the *plumassier*, or artisan who prepares them for the toilette, to ornament the heads of ladies, or to give a finishing stroke to the gay exterior of military men.—Ostrich feathers are imported from Algiers, Tunis, Alexandria, Madagascar, and Senegal.

FEBRIFUGE, in medicine, an appellation given to such medicines as mitigate or remove a fever.

FEBRUARY, in chronology, the second month of the year, reckoning from January, first added to the calendar of Romulus by Numa Pompilius. February derived its name from *Februa*, a feast held by the Romans in this month, in behalf of the *manes* of the deceased, at which ceremony sacrifices were performed, and the last offices were paid to the shades of the defunct. February in a common year consists only of 28 days, but in the bissextile year it has 29, on account of the intercalary day added that year.

FECIALES, a college of priests instituted at Rome by Numa, consisting of twenty persons, selected out of the best families. Their business was to be arbitrators of all matters relating to war and peace, and to be the guardians of the public faith.

FEDERAL GOVERNMENT, such a government as consists of several independent provinces or states, united under one head; but the degree to which such states give up their individual rights may be very different, although as relates to general politics they have one common interest, and agree to be governed by one and the same principle. Of such kind is the government of the United States of America.

FEE, a reward or recompense for professional services; as the *fees* of lawyers, physicians, &c. Public offices have likewise their settled *fees*, for the several branches of business transacted in them.

FEE-ESTATE, in law, properly signifies an inheritable estate in land, held of some superior or lord; and in this sense it is distinguished from *allodium*, which is the absolute property in land. It is the *theory* of the English law that all the lands of the kingdom, except the royal domains, are held in fee, or by a tenure, of some superior lord, the absolute or allodial property being only in the king, so that all the tenures are strictly feudal. The most ample estate a person can have is that of *fee-simple*; and such an estate can be had only in property that is inheritable, and of a permanent nature.——*Fee-farm*, a kind of tenure without homage, fealty, or other service, except that mentioned in the feoffment; which is usually the full rent. The nature of this tenure is, that if the rent is in arrear or unpaid for two years, then the feoffer and his heirs may have an action for the recovery of his lands.

FEELERS, a term generally applied to the *antennæ* of insects, which are vulgarly called horns; but, strictly, the feelers are distinguished from antennæ by being short, naked, and placed near the mouth. They are used in searching for food.

FEELING, one of the five external senses, by which we obtain the ideas of solid, hard, soft, rough, hot, cold, wet, dry, and other tangible qualities. This sense is the coarsest, but at the same time it is the surest of the five: it is besides the most universal. We see and hear with small portions of our body; but we feel with all. Nature has bestowed that general sensation wherever there are nerves, and they are everywhere, where there is life. Were it otherwise, the parts divested of it might be destroyed without our knowledge. All the nervous solids, while animated by their fluids, have this general sensation; but the papillæ in the skin, those of the fingers in particular, have it in a more exquisite degree. Like every other sense, feeling is capable of the greatest improvement: thus we see that persons, born without arms, acquire the nicest feeling in their toes; and, in blind people, this sense becomes so much developed, that individuals born blind, and acquiring the faculty of sight in after life, for a long time depend rather on their feeling than on their sight, because they receive clearer ideas through the former sense.

FEINT, in military tactics, a mock attack, made to conceal the true one.

FELIS, in zoology, a genus of the order *feræ*. This tribe is temperate in its habits, climbs trees, sees best by night, and when falling from a height lights on the feet: waves the tail when in sight of prey, and refuses vegetable food except from necessity. It includes the lion, tiger, cat, panther, &c., which we accordingly call the *feline* race.

FELLOES, the pieces of wood which form the circumference or circular part of the wheel.



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FEL'LOW, the member of a college or of a corporate body.——This word has a very wide and opposite meaning; for though we say, in speaking of a skilful artist, this man has not his *fellow*, we also apply it in the most ignoble sense, and say, such a one is a mean or worthless *fellow*.

FEL'LOWSHIP, in arithmetic, a rule by which the loss and gain of each particular person in a joint-stock concern is discovered.

FELO DE SE, in law, a person that, being of sound mind, and of the age of discretion, wilfully causes his own death. The goods and chattels of a *felo-de-se* are forfeited to the king: but the coroner's jury, summoned for the purpose of inquiring into the cause of death, &c., frequently save the forfeiture, by finding a verdict of lunacy; to which they are inclined on a favourable interpretation, that it is impossible for a person in his senses to do a thing so contrary to nature.

FEL'ONY, in law, includes generally all capital crimes below treason, such as murder, burglary, &c.; and is punished with death or transportation, according to the enormity of the offence.

FEL'SPAR, or FELD'SPAR, a mineral compound of silica, alumina, and potash; one of the constituents of granite, softer than quarts, harder than glass, and generally white, greyish, or reddish. The general figure of the numerous crystals of felspar is an oblique prism, with unequally produced planes, whose number varies from four to ten. These prisms are terminated by summits, ordinarily composed of two large culminating faces, and several smaller faces, which seem to obey no constant law of arrangement: hence it results, that the forms of felspar are among the most difficult of any to understand and describe. In its decomposed state, felspar furnishes the *petuntse*, or Cornish stone, so much used in the porcelain and best pottery manufactures.

FELT, a sort of coarse wool, fur, or hair, used in the making of hats. The method of working up the materials into a species of cloth, independently of either spinning or weaving, is called *felting*. These materials are intimately mixed together by the operation of *bowing*, which depends on the vibrations of an elastic string, the rapid alternations of its motion being peculiarly well adapted to remove all irregular knots and adhesions among the fibres, and to dispose them in a very light and uniform arrangement. This texture, when pressed under cloths and leather, readily unites into a mass of some firmness; and by various subsequent operations a hat is formed.

FELUC'CA, a light open vessel with six oars, much used in the Mediterranean. It has this peculiarity, that its helm may be used either at the head or the stern.

FE'MALE-FLOWER, in botany, a flower which is furnished with the pistil, or female organs.

FE'MALE SCREW, a screw, the spiral thread of which is cut in the cavity of the cylinder.

FEME COV'ERT, in law, a married woman, who is under covert of her husband. By the common law of England, the legal capacity of a woman to contract, or sue and be sued, separately, ceases on her marriage; and her husband becomes liable to her debts existing at that time.——*Feme sole*, a single woman.——*Feme-sole merchant*, a woman who carries on trade alone, or without her husband.

FEM'ININE, in grammar, denoting the female gender.

FEMO'RAL, belonging to the thigh; as, the *femoral* artery.

FEN, a place partially overflowed with water, abounding in bogs, and producing sedges, coarse grass, or other aquatic plants. The fens generally teem with wild ducks, teal, pike, eels, &c.

FEN'CING, the art of using skilfully a sword or foil either in attack or defence. In the exercise of this art, foils or thin swords are used, which, being blunted at the points, and bending readily, are rendered harmless.

FEN'-CRICKET, in entomology, *Gryllotalpa*, an insect that digs for itself a little hole in the gound.

FEN'DERS, a sea term for pieces of old cable, &c. hung over the sides of a ship to keep off other ships.

FENES'TRA, in anatomy, a term applied to two openings or *foramina* within the ear, distinguished by the names of the oval and the round fenestra.

FEN'NEL, in botany, a fragrant plant of the genus *Anethum*, cultivated in gardens.

FEODUM, FEOD, or FEUD, in feudal law, the right which the vassal had in land, &c. to use the same, and take the profits thereof, rendering unto his lord such fees, duties, and services, as belonged to military tenure.

FEOFFMENT, in law, is a gift or grant of any manors, messuages, lands, or tenements to another in *fee*, that is, to him and his heirs for ever, by delivery of seisin, and possession of the estate granted. The giver is called the *feoffer*, and the person who is thus invested is called the *feoffee*.

FER'Æ, in zoology, the third order of animals in the Linnæan system, including such as have from six to ten conic fore teeth and one tusk; as the seal, the dog, the wolf, the hyæna, the jackal, the lynx, the tiger, the panther, &c.

FER'Æ NATUR'Æ, in law, are beasts and birds that are wild; as foxes, hares, wild-ducks, &c., in which no person can claim any property.

FERA'LIA, in antiquity, a festival observed among the Romans, on the 21st of February, or, according to Ovid, on the 17th, in honour of the *manes* of their deceased friends and relations. During the ceremony, which consisted in making presents at their graves, marriages were forbidden, and the temples of the divinities shut up; because they fancied that during this festival, departed spirits suffered no

BEFORE THE BLOWPIPE, UPON CHARCOAL, FELSPAR BECOMES GLASSY, SEMI-TRANSPARENT, AND WHITE, BUT MELTS WITH DIFFICULTY.

PENCING GIVES STRENGTH AND FLEXIBILITY TO THE LIMBS, QUICKNESS AND ACCURACY TO THE EYE, AND SELF-POSSESSION TO THE MIND.



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EXCESSIVE FERMENTATION IS ALWAYS INJURIOUS TO LIQUORS.



LEAD IS USED BY WINE-MERCHANTS TO STOP THE ACETIC FERMENTATION OF WINE, AND TO RENDER WHITE WINES TRANSPARENT.

IN ALL VINOUS FERMENTATIONS, A DECOMPOSITION OF THE SACCHARINE MATTER TAKES PLACE, AND CARBONIC ACID IS PRODUCED.

pains in hell, but were permitted to wander about their graves, and feast upon the meats prepared for them.

FER DE FOURCHETTE, in heraldry, a cross having at each end a forked iron, like that formerly used by soldiers to rest their muskets on.

FERENTA'RIA, in ancient Rome, a sort of light-armed soldiers.

FE'RIA, in the Romish breviary, is applied to the several days of the week; thus Monday is the *feria secunda*, Tuesday the *feria tertia*, and so on.

FE'RIÆ, in Roman antiquity, holidays, or days upon which they abstained from business. The *feriæ* were of several kinds, namely, *Feriæ stativæ*, or stated festivals; *feriæ conceptivæ* or movable feasts; *feriæ imperativæ*, or occasional festivals enjoined by the consuls or other magistrates on some public occasion; and *feriæ denicales*, for private occasions. There were also the *feriæ Latinæ*, kept by the fifty Latin towns on Mount Albanus; and the *feriæ mundinæ*, festivals kept for nine days on the appearance of any prodigy.——It was a pollution of the *feriæ*, according to Macrobius, if the *res sacrorum* or *flamines* saw any work done on them, and therefore they ordered proclamation to be made by the herald, that every one might abstain from work; and whoever transgressed the order was fined.

FE'RINE, an epithet for such beasts as are wild and savage, as lions, tigers, wolves, bears, &c.

FE'RIO, in logic, a mode in the first figure of syllogisms, consisting of a universal negative, a particular affirmative, and a particular negative.——A similar mode in the third figure of syllogisms, is termed *ferison*.

FERMENTA'TION, that change in the principles of organic bodies which begins to take place spontaneously as soon as their vital functions have ceased, and by them are at length reduced to their first principles. This has been distinguished into three stages, the *vinous*, *acetous*, and *putrefactive*. It is ascertained almost beyond doubt, that the vinous fermentation takes place only in such bodies as contain saccharine juices. In this the most remarkable product is a volatile, colourless, slight inflammable fluid, which mixes with water in all proportions, and is called alcohol. The acetous fermentation is distinguished by the product known by the name of vinegar, which is the least destructible of the vegetable acids. It does not appear, however, that fermentation is absolutely necessary for the production of this acid, as there are many other chemical processes by which it may be obtained or produced. The acetous fermentation is conducted on a large scale, for yielding the common vinegar of commerce. In France, it is prepared by exposing weak wines to the air during warm weather. In England, it is made from a solution of brown sugar, or molasses, or an infusion of malt. The vinegar thus obtained, however, always contains a large quantity of mucilaginous and other vegetable matters, the presence of which renders it liable to several ulterior changes. In the putrid fermentation, bodies appear to be reduced into their most simple parts. Ammonia is the product which has been remarked as the chief of this process, and is no doubt produced by the combination of the hydrogen and nitrogen gases, which are disengaged together. Fermentation differs from effervescence. The former is confined to animal and vegetable substances; the latter is applicable to mineral substances: the former is spontaneous; the latter, produced by the mixture of bodies.

FERN, a weed, very common in dry and barren places, which is very injurious to the land in which it has once taken root. Ferns are of the *cryptogamia* class, without flowers or apparent germs, similar to lichens, mushrooms, and mosses. Between the tropics, several species form small trees, having something of the aspect of palms, and are considered one of the greatest ornaments of those regions.

FERRA'RIA, in botany, a genus of plants, class 20 *Gynandria*, order 2 *Diandria*. The species are bulbous, and include the iris, narcissus, &c.

FER'RET, an animal of the genus *Mustela* or weasel tribe, of a pale yellow colour, with red eyes and a long snout; it is much used in catching rabbits and rats.

FERRIC, pertaining to or extracted from iron.——*Ferric acid* is the acid of iron saturated with oxygen.

FERRI-CAL'CITE, in mineralogy, a species of calcareous earth or limestone combined with a large portion of iron.

FER'RILITE, in mineralogy, a variety of *trap*, containing iron in the state of oxyde.

FERRO-CY'ANATE, in chemistry, a salt formed by the union of ferro-cyanic acid with a salifiable base, as the *ferro-cyanate* of ammonia or potash.

FERRO-PRU'SSIATE, in chemistry, a compound of the ferro-prussic acid with a base.

FERRO-PRU'SSIC, or FERRO-CYAN'IC, in chemistry, terms designating a peculiar acid, formed of prussic acid and protoxyde of iron.

FERRO-SIL'ICATE, in chemistry, a compound of ferro-silicic acid with a base, forming a substance analogous to a salt.

FERRO-SILI'CIC, in chemistry, a term designating a compound of iron and silex.

FERRU'GINOUS, of the colour of rust or the oxyde of iron.

FER'RUM, a genus of minerals of the order of metals. [See IRON.]

FER'ULA, in ecclesiastical history, signifies a place separated from the church, wherein the *audientes* were kept, as not being allowed to enter the church.——Under the eastern empire, the *ferula* was the emperor's sceptre, as is seen on a variety of medals; it consisted of a long stem or shank, and a flat square head.——*Ferula*, or *Ferule*, an instrument of correction, in schools, with which boys are beaten on the palm of the hand.



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FERU'LA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. The species are perennials, and consist of the different kinds of fennel.

FERULA'CEOUS, in botany, an epithet pertaining to reeds or canes; or to plants resembling the ferula.

FERU'LE, in surgery, splinters or chips of different matter, as of wood, bark, leather, paper, &c. applied to bones that have been disjointed, when they are set again.

FERRY, the place or passage where boats pass over water to convey passengers.

FESCEN'NINE VERSES, in ancient Rome, were a sort of extemporary dialogue, in which the performers with a gross and rustic kind of raillery reproached each other, as well as their audience, with their vices and foibles. They received their name from Fescennia, a town in Tuscany, where this species of rude poetry was first used. Under cover of this practice much indecency prevailed; and the emperor Augustus therefore prohibited it, as tending to corrupt the public morals.

FESSE, in heraldry, one of the nine honourable ordinaries, consisting of a line or belt drawn directly across the shield, from side to side, and containing the third part of it. When figures are contained within the breadth of the fesse, it is said to be charged, or they are said to be *en fesse*.——*Fesse point*, the exact centre of the escutcheon.——*Fesse ways*, or *in fesse*, denotes any thing borne in the way of a *fesse*: that is, in a rank across the middle of the shield.——*Parte per fesse*, a parting across the middle of the shield, from side to side, through the *fesse point*.

FESTINO, in logic, a mood of syllogisms in the second figure, in which the first proposition is a universal negative, the second a particular affirmative, and the third a particular negative.

FESTIVALS. [For the religious feasts of the Christians, and the feasts of the ancients, see FEASTS.] To which may be added,—that although it is impossible not to recognize in these festivals a Jewish, and, in part, also a pagan origin, it was, nevertheless, subsequently ordained by special ecclesiastical regulations, that they should not be celebrated in common with Jews, heathens, or heretics. In fact, to prevent these festivals from degenerating, and to preserve the distinction between them and the heathen customs, the Christian church implored the exercise of the civil powers for the preservation of the purity of the holidays and customs, and for the prohibition of all public amusements by which the sanctity of divine worship might be impaired. In this manner the Christian festivals united the serious and moral character of the Jewish with a certain freedom and cheerfulness, which they acquired from a system of paganism.

FESTOON, in architecture and sculpture, &c. an ornament representing flowers, fruits, and leaves, intermixed or twisted together; suspended at the ends, and falling down in the form of an arch.

FESTU'CA, in botany, a genus of plants, class 3 *Triandria*, order 2 *Digynia*. The species are perennials, and consist of the different kinds of fescue-grass.

FET'ICHISM, or FET'ICISM, the worship of idols among the negroes of Africa, among whom *fetich* is the name by which an idol is designated. They believe that the household or family *fetich* narrowly inspects the conduct of every individual in the house, and rewards or punishes each according to his deserts.

FET'LOCK, a tuft of hair that grows behind the pastern joint in the feet of many horses.

FEUD, an inveterate quarrel between families or parties in a state. The word is not applicable to wars between different nations, but to intestine wars and animosities between families, clans, or tribes.

FEU'DAL SYSTEM, a form of government anciently subsisting in Europe, and which, about twelve centuries ago, was so universally received, that Spelman calls it "the law of nations in our western world." It still forms the basis of modern customs, and therefore every Briton, who would understand the history of his country, the origin of its political constitution, the tenure of its landed property, and the general basis of its polity, should make himself acquainted with it. With respect to the origin of this system, we are told that it is to be found in the military policy of the Celtic or northern nations, known by the names of Goths, Vandals, Franks, Huns, and Lombards, who overran Europe on the declension of the Roman Empire, and brought it with them from the countries out of which they emigrated. According to the feudal scheme, a victorious leader allotted considerable portions of land, called *feuds*, *fefs*, or *feuda*, to his principal officers, who in their turn, divided their possessions among their inferiors; and the condition upon which these rewards were given, was that of faithful military service both at home and abroad. To this they engaged themselves by an oath of fealty; in the event of a breach of which, either by not performing the service agreed upon, or by deserting their lord in time of battle, &c., the lands were to return to their original possessor. Every person, therefore, who was a feudatory, *i. e.* who had received lands, was bound to do every thing in his power to defend the lord of his fee; while, on the other hand, the latter was no less subordinate to his immediate superior; and so on up to the prince himself. Thus the several orders of vassals formed a system of concentric circles, of which each was under the influence of the next, and all moved around a common centre, the king, as the supreme feudal lord. As there was a graduated scale from the lowest vassal to the prince or lord paramount of the territory, every man's interest was involved in the security of the whole; and every man was a pledge of security to his neighbour. In the midst of that disinterestedness of sentiment which belongs to a rude state of



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society, the connection of the lord and his vassal was of the most admirable nature; and, as is the end of all social combinations, each individual contributed to support that strength by which he was protected. But besides these feudal grants, which were held only on the terms of military service above mentioned, there were others called *allodial*, which were given upon more enlarged principles. To these every free man had a title, and could not only claim his territory as well as the rest, but dispose of it at his pleasure. A part of their freedom consisted in liberty to go to the wars; for this, in the times to which we are referring, was the only way to acquire any degree of renown. Only the serfs or villeins, were destined to follow the arts of peace. The feudal vassals, properly so called, constituted the army; while the national militia was composed of the allodial proprietors. It has, however, often been argued, that the bare theory of feudal government, as a permanent institution, however fair-seeming, is hollow; that the family connexion it supposes could be but a source of minute, domestic tyranny; and that in their best period, the customs enumerated must have been liable to the grossest abuse. In process of time, the evil increased to an enormous height; and even the political value of the system decayed. In its vigour, it had at least constituted a regular, powerful, and compact system of government; a unanimity had pervaded the various departments of the state; and while the power was internally diffused, it presented to foreign nations a united and formidable front. As the ideas engendered by property advanced, and the great grew more avaricious of money than of glory; and when, it ought perhaps to be added, man's notions of right and order became more correct, nothing was heard of but the enormities of the powerful, and the sufferings of the humbler classes; and the strength of feudal governments declined amidst a spirit of disaffection too universal to be checked.——Mr. Hallam, in his work on the Middle Ages, ably exhibits a picture of the advantages and disadvantages of the feudal system: a portion of which we will here abridge. If, says he, we look at the feudal polity as a scheme of civil freedom, it bears a noble countenance. To the feudal law it is owing, that the very names of right and privilege were not swept away, as in Asia, by the desolating hand of power. The tyranny which, on every favourable moment, was breaking through all barriers, would have rioted without control, if, when the people were poor and disunited, the nobility had not been brave and free. So far as the sphere of feudality extended, it diffused the spirit of liberty, and the notions of private right. The bulk of the people, it is true, were degraded by servitude; but this had no connexion with the feudal tenures. As a school of moral discipline, the feudal institutions were perhaps most to be valued. Society had sunk, for several centuries after the dissolution of the Roman empire, into a condition of utter depravity; where, if any vices could be selected as more eminently characteristic than others, they were falsehood, treachery, and ingratitude. In slowly purging off the lees of this extreme corruption, the feudal spirit exerted its ameliorating influence. Violation of faith stood first in the catalogue of crimes, most repugnant to the very essence of a feudal tenure, most severely and promptly avenged, most branded by general infamy. The feudal law-books breathe throughout a spirit of mutual obligation. The feudal course of jurisdiction promoted, what trial by peers is peculiarly calculated to promote, a keener feeling and readier perception of moral as well as of legal distinctions. And as the judgment and sympathy of mankind are seldom mistaken in these great points of veracity and justice, except through the temporary success of crimes, or the want of a definite standard of right, they gradually recovered themselves, when law precluded the one and supplied the other. In the reciprocal services of lord and vassal, there was ample scope for every magnanimous and disinterested energy. The heart of man, when placed in circumstances which have a tendency to excite them, will seldom be deficient in such sentiments. No occasions could be more favourable, than the protection of a faithful supporter, or the defence of a beneficent suzerain, against such powerful aggression, as left little prospect except of sharing in his ruin. From these feelings, engendered from the feudal relation, has sprung up the peculiar sentiment of personal reverence and attachment towards a sovereign, which we denominate loyalty; alike distinguishable from the stupid devotion of eastern slaves, and from the abstract respect with which free citizens regard their chief magistrate. Men who had been used to swear fealty, to profess subjection, to follow, at home and in the field, a feudal superior and his family, easily transferred the same allegiance to the monarch. It was a very powerful feeling which could make the bravest men put up with slights and ill-treatment at the hands of their sovereign; or call forth all the energies of disinterested exertion for one whom they never saw, or in whose character there was nothing to esteem. In ages when the rights of the community were unfelt, this sentiment was one great preservative of society; and though collateral or even subservient to more enlarged principles, it is still indispensable to the tranquility and permanence of every monarchy. In a moral view, loyalty has scarcely perhaps less tendency to refine and elevate the heart than patriotism itself; and holds a middle place in the scale of human motives, as they ascend from the grosser inducements of self-interest, to the furtherance of general happiness, and conformity to the purposes of Infinite Wisdom.

FE'VER, in medicine, a disease characterized by an increase of heat, an accele-



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rated pulse, great thirst, and an impaired state of several functions. The varieties are numerous; but the grand division is into *remitting* fevers, which subside or abate at intervals; *intermitting* fevers, which intermit or entirely cease at intervals; and *continued* fevers, which neither remit nor intermit.

FEUIL'LANS, an order of bare-footed monks, who observe the same rules with the Benardines.

FI'AT, in law, a short order or warrant signed by a judge, for making out and allowing certain processes.——*Fiat justitia* are the words written by the king on his warrant to bring a writ of error in parliament, &c.

FIB'RINE, in chemistry, a peculiar organic compound, found both in animals and vegetables. It is a soft solid, of a greasy appearance, insoluble in water, which softens in the air, becoming viscid, brown, and semi-transparent. It exists in chyle; it enters into the composition of blood; and it forms the chief part of muscular flesh. As the basis of flesh it is a very nutritious substance, and is essential to the sustenance of carnivorous animals.

FI'BRE, in anatomy, a simple filament, serving to form other parts. Some are hard and elastic; others are soft and flexible; some are so small as scarcely to be visible; while others are larger and appear to be composed of still smaller fibres. They constitute the substance of the bones, cartilages, muscles, nerves, veins, &c.——*Fibre* is also used to denote the slender filaments which compose other bodies, whether animal, vegetable, or mineral; but more especially, the capillary roots of plants.

FIB'ROLITE, a mineral that occurs with corundum, of a white or gray colour, composed of minute fibres.

FIBRIL'LA, in botany, the branch or division of a radical fibre.——In anatomy, *fibrillæ* are small fibres.

FIB'ULA, in anatomy, the outer and smaller bone of the leg. It is nearly of a triangular figure, and stands parallel to, but distant from the *tibia*.

FIC'TION, in law, a supposition that a thing is true without enquiring whether it is or not, so that it may have the effect of truth, as far as is consistent with equity.

FIEF, a fee; an estate held of a superior on condition of military service. [See FEUDAL SYSTEM.]

FIELD, in heraldry, the whole surface of the shield or escutcheon.——*Field*, in military tactics, the ground chosen for any battle.——*Field*, in painting, the ground or blank space on which anything may be drawn.

FIELD-MAR'SHAL, the highest military officer in England.——*Field-officer*, a military officer above the rank of a captain, as a major or colonel.——*Field-colours*, in war, are small flags of about a foot and a half square, which are carried along with the quarter-master general, for marking out the ground for the squadrons and battalions.——*Field pieces*, small cannons, from three to twelve pounders, carried along with an army in the field.——*Field-staff*, a weapon carried by the gunners, about the length of a halbert, with a spear at the end; having on each side ears screwed on, like the cock of a match-lock, where the gunners screw in lighted matches, when they are upon command.——*Field-works*, in fortification, are those thrown up by an army in besieging a fortress, or by the besieged to defend the place.

FIE'LD-DUCK, a species of bustard, nearly as large as a pheasant.

FIE'LDFARE, a migratory bird, of the genus *Turdus* or thrush. They pass the summer in the northern parts of Europe, but visit Great Britain in winter.

FI'CUS, in botany, a genus of plants, class 23 *Polygamia*, order 3 *Trioecia*. The species are shrubs or trees, the *Ficus carica*, *Caprificus*, *Ficus Indica*, &c.

FI'ERI FA'CIAS, in law, a judicial writ commanding the sheriff to levy the debt or damages on the goods of one against whom judgment has been had in an action of debt.

FIFTEE'NTH, an ancient tribute or tax laid upon cities, boroughs, &c. through all England, and so termed because it amounted to a fifteenth part of what each city or town had been valued at; or it was a fifteenth of every man's personal estate according to a reasonable valuation. In doomsday-book, there are certain rates mentioned for levying this tribute yearly.

FIG, the fruit of the fig-tree (*ficus carica*). Figs are produced abundantly in Turkey, Greece, Italy, Spain, France, and northern Africa. They are of an oblong shape, and of a dark purple or brownish colour, with a pulp of a sweet taste. When ripe, they are generally dried in ovens to preserve them, and then packed very closely in the small chests and baskets in which we import them. Dried figs, with barley bread, are now the ordinary food of the lower classes in Greece and the Archipelago.

FIG'URAL, or FIG'URATE NUMBERS, are such as do or may represent some geometrical figure in relation to which they are always considered, as *triangular* numbers, *pentagonal* numbers, *pyramidal* numbers, &c.

FIG'URATIVE, a term applied to whatever is expressed by obscure resemblances; as the types and mysteries of the Mosaic law; and also to any expression which is not taken in its primary and literal sense.

FIG'URE, in physics, denotes the surface or terminating extremities of any body; and, considered as a property of body affecting our senses, is defined, a quality which may be perceived by two of the outward senses—touch and sight.——*Figure*, in geometry, the superficies included between two or more lines; and is denominated either *rectilinear*, *curvilinear*, or *mixed*, according as the extremities are bounded by right lines, curve lines, or both. In the higher geometry, the term is applied to three mechanical curves, called the figure of the *secants*, figure of the *sines*,





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and figure of the *tangents*.——*Figure*, in fortification, is the plan of any fortified place, or the interior polygon, which, when the sides and angles are equal, is called a *regular*, and when unequal, an *irregular* figure.——*Figure*, in astrology, signifies a description of the disposition of the heavens at a certain hour, in which the places of the planets and stars are marked in a *figure* of twelve triangles, called houses.——*Figure*, in dancing, denotes the several steps which the dancer makes in order and cadence, considered as they mark certain *figures* on the floor.——*Figure*, in rhetoric, a mode of speaking or writing in which words are deflected from their ordinary signification, thereby expressing a passion with more emphasis and beauty than by the ordinary way. Rhetorical figures are often highly serviceable as well as ornamental, and serve to awaken and fix attention; but they are to be used with prudence and caution; for whatever is described in a multitude of words, or is carried on to a disproportionate length, fails of the end proposed, and grows tiresome rather than pleasing. The principal figures of rhetoric are the metaphor, allegory, simile, and personification; which, with their further divisions into hyperbole, climax, antithesis, &c., will be found under their respective heads.——*Figure*, in painting and designing, denotes the lines and colours which form the representation of any animal, but more particularly, of a human personage. Thus a painting is said to be full of figures, when there are many representations of men; and a landscape is said to be without figures, when there is nothing but natural scenery.——*Figures*, in arithmetic, are certain characters whereby we denote any number which may be expressed by any combination of the nine digits, &c.

FIL'ACER, an officer of the commonpleas, so called from his filing the writs on which he makes out processes. There are fourteen of these officers, who are severally allotted to particular divisions and counties, and make out all original processes, real, personal and mixed.

FIL'AMENT, in botany, the thread-like part of the stamen, which supports the anther.

FILA'RIA, in entomology, a genus of the class *Vermes*, and order *Intestina:* the most destructive is the *Filaria-medinensis*, or Guinea-worm; which inhabits both Indies, and is frequent in the morning-dew, whence it enters the naked feet of the slaves, and creates the most troublesome itching, accompanied with inflammation and fever. It is frequently from eight to ten feet in length, and not larger than a horse-hair.

FILE, in mechanics, an instrument used in smoothing and polishing metals, formed of iron or steel, and cut in little furrows. Files are called by different names, according to their various degrees of fineness; and are also distinguished from their shape, as flat, half-round, three-square, four-square and round.

FILI'CES, in botany, an order of plants of the class *Cryptogamia* in the Linnæan system, including the fern, horse-tail, adder's tongue, maiden-hair, spleenwort, &c.

FIL'IFORM, in botany, having the form of a thread or filament; as a filiform style or peduncle.

FIL'AGREE-WORK, or FILIGRANE, a delicate and elaborate manufacture, primarily executed in threads of gold and silver, but lately imitated with coloured and gilt paper. In Sumatra, manufactures of filagree-work are carried to very great perfection. In China also, where the filagree is mostly of silver, many beautiful articles are produced.

FIL'LET, in architecture, a little square member, ornament, or moulding, used in various places, but generally as a corona over a great moulding.——Among painters and gilders, a little rule or line of leaf-gold, drawn over certain mouldings, or on the edges of frames, panels, &c.——In heraldry, a kind of narrow bordure, which runs quite round near the edge.

FIL'LIBEG, a dress reaching only to the knees, worn in the highlands of Scotland.

FIL'LY, a term among horse-dealers, to denote the female or mare foal.

FILM, a thin skin or pellicle, as on the eye. In plants, it denotes that thin woody skin which separates the seeds in pods.

FILTRATION, the process by which a liquid is freed from solid bodies mixed with it, or from any impurities which it holds in solution, by passing it through a linen or woollen bag, or filtering paper. Various other contrivances have also been invented for purifying muddy, corrupt, and putrid water, and rendering it fit for drinking; such as a porous kind of stone, sand, charcoal, &c.; and many patents have been obtained for filtering machines, some of which are excellent. In the "Proceedings of the British Association," the following *simple water filter* is recommended by Mr. J. T. Hawkins, which as it is effectual, and neither expensive nor troublesome, is worth knowing. The material is charcoal, which must be perfectly well burnt, and kept from exposure to the atmosphere; a test of good charcoal is that, when pulverized, it sinks rapidly in water. The charcoal must be supported on an indestructible material, as a plate of burnt clay, perforated with holes. The filter may consist of a common garden-pot, or similar vessel, with holes at the bottom. The lower part may be filled with round pebbles, then some smaller pebbles, then some coarse sand, and, finally, a stratum of pounded charcoal, of about three or four inches in thickness. It is a great mistake to put any material as sand, above the charcoal, with the view of arresting the grosser particles of impurity, as the sand will quickly stop up and be impervious to water. A filter prepared as above directed, will render water perfectly clean and sweet for many years.——In the filtering establishments at Paris, there are a great number of small boxes, lined with lead, which are open at top, and contain at bottom a bed of charcoal between two layers of sand.



IT IS OFTEN DESIRABLE SO TO CONSTRUCT THE FILTERING APPARATUS, THAT THE LIQUID SHOULD ASCEND BY HYDROSTATIC PRESSURE.

THE ITALIANS, WHO FIRST INTRODUCED FILIGREE-WORK, PLACED SMALL BEADS UPON IT, AND GAVE TO IT THE NAME OF "FILAGRANA."

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When the waters of the Seine and Marne arrive at Paris, very highly charged with salt, and undergo depuration in those boxes, it is found necessary to renew the upper strata every day, if not twice a-day. But lately, a most important improvement in filtration has been invented by Mons. de Fonveille, which is, to close the little filtering boxes hermetically, and to cause the water to pass through the filtering mass, not by its own weight merely, or by a simple charge but by high pressure. This mode is now practised at the Hotel Dieu, and it is asserted that 24 gallons of clarified water are thus produced in one minute. In cleaning the hermetically closed filters of the Hotel Dieu, the workmen, whose business it is, open suddenly and almost simultaneously, the cocks of the tubes which connect the bottom and top of the apparatus with the elevated reservoirs, or with the body of the feeding pump. The filter is thus tumultuously agitated by two cross currents, which have the effect of detaching from the filtrating gravel, the foreign matters which would otherwise remain adhering to it.

FIL'TRUM, in mineralogy, a Mexican stone, known also by the name of the filtering stone, of which it has the properties.

FIM'BRIÆ, appendages disposed by way of fringe round the border of anything. Hence *fimbriate* is a term used in botany for fringed, or surrounded by bristles; and *fimbriated*, in heraldry, is an epithet for an ordinary with a narrow bordure or hem of another tincture.

FIN, in natural history, a well known part of fishes, consisting of a membrane supported by rays, or little bony or cartilaginous ossicles; their use being to propel them rapidly through the water. Fishes, in general, possess five kinds of fins: 1st, the *dorsal*, or those of the back, varying in number from one to four; 2. the *pectoral*, or breast fins, which are inserted immediately below the gills; 3. the *ventral*, or abdominal fins, which are placed under the throat or belly, and point backwards; 4. the *anal* fins, situated under the tail; and, 5. the *caudal*, or tail fin, serving as the rudder by which the fish steers itself. Articulating with points of the internal skeleton or frame work, the fins possess great power. The muscles which move them are very strong, and, by a peculiar arrangement, they are enabled to erect the spines immovably at will, which is observed when fishes are taken by the hook. In colour and size, the fins of fish present the greatest variety, affording excellent characters for distinguishing the species.

FI'NAL CAUSES, the purposes or ultimate ends in view. The *efficient* cause is that which produces the event or effect; the *final* cause is that for which anything is done.

FINA'LE, the concluding part of a musical composition. In instrumental pieces, it has mostly a character of vivacity, and requires a quick movement and lively performance.

FINAN'CES, in political economy, denote the revenue of a king or state, or in other words, the money raised by loans, taxes, &c., for the public service. The English system of finance rests on the produce of the various taxes which have been imposed at different periods, the aggregate amount of which, after deducting the expenses of collection, together with a few small articles which cannot properly be called taxes, forms the whole of the public income: this income is annually appropriated to the several branches of the national expenditure, and when, in consequence of any extraordinary expences, it is known that the income of the current year will be insufficient to meet all the demands upon it, it is usual to borrow the sum necessary to make up the deficiency, either from individuals or public bodies, and to allow a fixed rate of interest on the money thus obtained, till the principal shall be repaid, or till the period originally agreed upon shall have expired.——A person employed in the economical management and application of the public money is called a *financier*.

FINCH, in ornithology, a numerous class of birds, forming the genus *Fringilla* of Linnæus; of which the most celebrated are the goldfinch, canary, and linnet.

FINE, in law, a penalty or amends made in money for an offence; also money paid for the renewal of a lease, and a conveyance of lands or tenements in order to cut off all controversies.

FINE ARTS, a term somewhat indefinite in its meaning, but generally applied to those arts which depend on the mind and imagination; opposed to the mechanical.

FI'NERY, the furnace in which metals are refined, that is, hammered and fashioned into what is called a blossom, or square bar.

FIN'GERS, in anatomy, the extreme part of the hand divided into five members, usually called the four fingers and the thumb. The names of the fingers, reckoning from the thumb, are,—1, *pollex*; 2, *index*; 3, *medius*; 4, *annularis*; 5, *auricularis*. In each of these there are three bones, which make three phalanges, the upper of which are much larger than the lower. Their exterior surface is convex, and their interior plane, but somewhat hollowed, for the convenience of grasping.

FIN'GERING, in music, the act of disposing of the fingers in a convenient, natural, and apt manner, in the performance of any instrument, but more especially the organ and piano-forte. Good fingering is one of the first things to which a judicious master attends; for to a facility in this branch of the performer's art must a pupil look, as the means of acquiring a facile and graceful execution, and the power of giving passages with articulation, accent, and expression.

FI'NITE, in mathematics, an epithet for a series, line, &c., which is bounded or limited, in extent, duration, &c., in distinction from *infinite*.



SEVERE WOUNDS ARE SOMETIMES INFLICTED ON FISHERMEN BY THE SPINY PROCESSES OF THE FINS OF CERTAIN FISH.

THE CANARY BIRD IS THE MOST REMARKABLE AND MELODIOUS OF THE FINCH TRIBE, AND THE GOLDFINCH IS THE HANDSOMEST.

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FINNO'CHIA, or SWEET-FENNEL, in botany, a species of fennel, cultivated in gardens as a salad herb.

FIN'TO, in music, a feint or an attempt to do something and not to do it; as *cadenza fatta*, when having done every thing proper for a true character, instead of falling on the right final, a higher or a lower note is taken.

FIR-TREE, the name of several species of the genus *Pinus;* as the Scotch fir, the silver fir, spruce fir, &c. [See PINE.]

FIRE. In former times, fire obtained a place among the elements, and was for a long time considered to be a constituent part in the composition of all bodies, and to require only the concurrence of favourable circumstances to develope its activity. Its all-consuming energy, the similarity of its effects to those of the sun, its intimate connexion with light, its terrible and yet beneficent power,—easily explain how it happened that, in times when cause and effect, form and essence, were not yet distinctly separated, fire became an object of religious veneration, a distinguished element in mythology, an expressive symbol in poetry, and an important agent in the systems of cosmogony. When natural philosophy was treated in the schools, theories were adopted to which little attention is paid in the present age, when all science is founded on facts and observations. Caloric, be it a material agent or the consequence of vibratory motion, is at present considered the cause of the phenomena which were formerly ascribed to fire; and though its nature is as unknown to us as that of fire was to the ancients, the substitution of one of these terms for the other has introduced a greater precision of language, and cause and effect are no longer confounded under the same name.——*Effects and properties of Fire.* From repeated experiments we learn, 1. that, in general, both solids and fluids manifest an expansive motion upon being heated; 2. that the direct inflammable matter of fuel, is oil, or an unctuous substance; 3. that no fuel will burn or consume, without the admission of fresh air; 4. that the air which has once passed through burning fuel is, of itself, unfit to animate fire again; 5. that flame exists only on the surface of fuel. It appears to be a property belonging to fire, that its parts endeavour equally to diffuse themselves; that is, by moving every way, and consequently tend neither more nor less to one point than another. If fire be collected in any body so as to be perceivable by our senses, it removes itself out of the same by its own power, and expands every way from the centre of its space or body. The parts of some bodies are extremely volatile, and will be dissipated by the action of fire; others are to be found whose parts are of such a nature, as not to yield to the force of fire, or the velocity communicated to them will not be able to dissolve the corpuscular attraction; but when this glowing velocity of the parts is abated, or, in other words, when the fire in the body is extinct, the parts, and, of course, the whole body, appear unaltered: of which we have striking instances in the asbestos and amianthus.——Speaking of the mechanical origin of heat and cold, Mr. Boyle says, "In the production of heat, there appears nothing on the part either of the agent or patient, but motion and its natural effects. When a smith briskly hammers a small piece of iron, the metal thereby becomes exceedingly hot; yet there is nothing to make it so, except the forcible motion of the hammer impressing a vehement and variously determined agitation of the small parts of the iron, which, being a cold body before, grows, by that super-induced commotion of its small parts, hot: first, in a more loose acceptation of the word, with regard to some other bodies, compared with which it was cold before: then, sensibly hot; because this agitation surpasses that of the points of our fingers; that in this instance oftentimes the hammer and anvil continue cold, after the operation; which shews that the heat acquired by the iron was not communicated by either of those implements, as heat; but produced in it by a motion, great enough strongly to agitate the parts of so small a body as the piece of iron, without being able to have the like effect upon so much greater masses of metal as the hammer and the anvil. Though if the percussions were often and briskly renewed, and the hammer were small, this also might be heated; whence it is not necessary, that a body itself be hot to give heat." Fire is contained in the largest quantity in air: and the pure part of it, that is, *oxygen*, being disposed to unite with many other matters, most of the ordinary processes of combustion and inflammation are the result of the sudden union of oxygen with some other substance, in which case the fire that was contained in the oxygen of the air is disengaged and let loose. [See COMBUSTION.]—— *Subterraneau fires.* The warm springs, the existence of extinct volcanoes, the effects of those still in activity, and the fact that the temperature of the earth becomes warmer the deeper we descend, have induced many philosophers to adopt the idea of subterranean fires, or of a central fire. According to the former hypothesis, there are combustible materials, in a state of ignition, in the bowels of the earth, which produce the heat indispensable for the production of the above-mentioned phenomena. The latter hypothesis supposes that the globe was once in a state of igneous fusion, that the surface has gradually become solid by cooling, and that the interior of the earth is still liquid and hot, and may remain so for ever, if the heat received from the sun is equal to that which it lost by radiation. [See EARTH, VOLCANO, &c.]

FIRE-ARMS, a general designation for all sorts of guns, fowling pieces, blunderbusses, pistols, &c., which effect their discharge by the combustion of gunpowder.



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A FISH BURNS BRISKLY IN COLD WEATHER, BECAUSE, AS THE AIR IS DENSE, IT AFFORDS MORE NOURISHMENT TO THE FIRE.

WHEN A FIRE IS EXTINGUISHED BY THE RAYS OF THE SUN, IT IS BECAUSE THEY ENGAGE THE OXYGEN WHICH SERVED IT.

The manufacture of these weapons in England is very extensive; and in order to prevent the numerous accidents which would otherwise occur from the bursting of ill-constructed barrels, the act 55 Geo. III. c. 59. imposes a fine of 20*l.* on any person using, in any of the progressive stages of its manufacture, any barrel not duly proved; on any person delivering the same, except through a proof-house; and on any person receiving, for the purpose of making guns, &c., any barrels which have not passed through a proof-house.

FIRE-BALLS, in military operations, balls which are capable of being ignited and burned: such, for instance, as are thrown by night from mortars or howitzers towards quarters which it is desirable to examine.——In natural philosophy, globular masses of fire, of different magnitudes, occasionally seen moving through the atmosphere with greater or less velocity. With regard to the nature of these phenomena there are various conjectures. [See FALLING STARS, METEORS, &c.]

FIRE-DAMP. [See DAMPS.]

FIRE-DRESS, an invention of the chevalier Aldini, consisting of an exterior light armour of metallic gauze, (which fabric was discovered by Sir Humphry Davy to be impervious to flame), and of an inner covering of a material which is a slow conductor of heat. Among flexible fibrous substances capable of being spun and woven into tissues, the asbestos possesses pre-eminently the property of slowly conducting heat: but woollen, cotton, &c., by immersion in certain saline solutions, may serve to prevent the transmission of injurious heat to the body, during a temporary exposure of some minutes to the action of flame on the outward covering of wire gauze.

FIRE-ENGINE, an engine for extinguishing fire, which consists of two forcing pumps so coubined that their joint action produces a constant and powerful stream of water, which, by means of a pipe, may be directed at pleasure to any point. The handles are so disposed, that, while the piston of one pump is up, that of the other is down; and they are elongated for the purpose of enabling a great number of men to work them at the same time.——By an ingenious application of steam power to the working of fire-engines, Mr. Braithwaite has added greatly to their usefulness. As soon as an alarm is given, the fire is kindled, and the bellows attached to the engine are worked by hand. By the time the horses are harnessed in, the fuel is thoroughly ignited, and the bellows are then worked by the motion of the wheels of the engine; so that generally by the time it reaches the fire the steam is ready. This engine will deliver about 9000 gallons an hour to a height of 90 feet, through an adjutage of 7-8ths of an inch; and the expense of fuel is stated to be only sixpence an hour.

FIRE-FLY, a small kind of beetle, common in America, which emits a beautiful phosphoric light from the under surface of the terminal segments of the abdomen. The phosphoric light produced by these insects is of a greenish yellow, and proceeds from a collection of yellowish matter under the tail, which is kindled or extinguished at pleasure, and which nature seems to have provided, as in the case of the glow-worm, in order to direct the sexes to each other.

FIRE-SHIP, a vessel filled with combustibles, and fitted with grappling-irons, which, with the advantage of a favourable wind, hook on to the enemy's vessels, and set them on fire.

FIRE-WORKS, compositions of sulphur, saltpetre, charcoal, and other ingredients; formed in a variety of ways, and which exhibit a handsome appearance when exploded. [See PYROTECHNY.]

FIRE (GREEK), a destructive composition, used in war from the 7th to the 13th century. When the Arabs besieged Constantinople in 668, the Greek architect Callinicus of Heliopolis, deserted from the caliph to the Greeks, and took with him a composition, which, by its wonderful effects, struck terror into the enemy, and forced them to take to flight. Sometimes it was wrapped in flax attached to arrows and javelins, and so thrown into the fortifications and other buildings of the enemy, to set them on fire. At other times it was used in throwing stone balls from iron or metallic tubes against the enemy. The receipt for the composition of the *Greek fire* was long supposed to be lost; but the baron Von Aretin of Munich has, it is said, discovered in a Latin MS. of the 13th century, in the central library in that city, a dissertation on the Greek fire, which contains the receipt.

FIRE-BOTE, in our old customs, is fuel or firing for necessary use, allowed to tenants, out of the lands granted to them.

FIRMAMENT, in Scripture, denotes the great arch or expanse over our heads, in which are placed the atmosphere and the clouds, and in which the stars *appear* to be placed, and are *really* seen.——In the Ptolemaic astronomy, the firmament is the eighth heaven or sphere, with respect to the seven spheres of the planets which it surrounds. It is supposed to have two motions; a diurnal motion, given to it by the *primum mobile*, from east to west about the poles of the ecliptic; and another opposite motion from west to east, which last it finishes, according to Tycho, in 25,412 years; according to Ptolemy, in 36,000; and according to Copernicus, in 25,800; in which time the fixed stars return to the same points in which they were at the beginning. This period is commonly called the Platonic, or great year.

FIRING-IRON, in farriery, an instrument not unlike the blade of a knife; which, being made red-hot, is applied to a horse's hams, or other places, such as preternatural swellings, farcy knots, &c. in order to discuss them.

FIRKIN, an English measure of capacity, containing nine gallons of beer.



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THE PRACTICE OF BRINGING FISH TO THE LONDON MARKETS BY LAND-CARRIAGE FIRST TOOK PLACE IN THE YEAR 1761.

would be depopulating the rivers to continue fishing any longer. It is performed with nets, and sometimes with a kind of locks or wears made on purpose, which in certain places have iron or wooden grates so disposed, in an angle, that being impelled by any force in a contrary direction to the course of the river, they may give way and open a little at the point of contact, and immediately shut again, when the force is removed. On coming up the rivers, the fish enter by these valves, which then close, and prevent their return. They are also taken by being attracted to the surface of the water by a light, when they may either be *speared*, or taken in a net spread for the purpose, and lifted with a sudden jerk from the bottom.——*Anchovies* are fished for on the coast of Provence, in the months of May, June, and July, at which season shoals of this fish regularly come into the Mediterranean through the straits of Gibraltar. They are likewise found in plenty in the river of Genoa, on the coast of Sicily, and on that of the island of Gorgona, opposite to Leghorn; these last are reckoned the best. Anchovies are seldom fished for but in the night time; for if a fire be kindled on the poops of the vessels, the anchovies will come in greater numbers into the nets. About 120,000lbs. are annually consumed in Great Britain.——The principal *Sturgeon-fishery* is in the mouth of the Volga, on the Caspian Sea, where the Russians employ a great number of hands, and catch them in a kind of inclosure formed by large stakes, representing the letter Z, repeated several times. These fisheries are open on the side next the sea, and close on the other side, by which means the fish are embarrassed, and easily taken, either in nets or by spearing. At certain seasons, thousands of Cossacks appear on the ice in sledges, each provided with a spear, several poles, and other instruments. As soon as the hetman of the fishers sets forward, they all dash after him in their sledges; the ice is cut, the spears cast; fishmongers, assembled from all parts of the empire, buy the fish, and the ice is soon covered with sturgeons. It soon finds its way to St. Petersburgh, &c; and the value of the fish, including that of the caviar and isinglass, imported into the interior, annually amounts, it is said, to at least 2,000,000 rubles.——The *Northern Whale Fishery*, on the coast of Greenland, begins in May, and continues till the end of July. The manner of taking whales is as follows. As soon as the fishermen hear the whale bellow, they cry out *fall! fall!* and every ship gets out its long-boat, in each of which there are six or seven men: they row till they come pretty near the whale, when the harpooner strikes it with the harpoon. This requires great dexterity, for through the bone of his head there is no striking, but near his spout there is a soft piece of flesh, into which the iron sinks with ease. As soon as he is struck, they take care to give him rope enough; otherwise, when he goes down, as he frequently does, he would inevitably sink the boat: this rope he draws with such violence, that if it were not well watered, it would, by its friction against the sides of the boat, be soon set on fire. The line fastened to the harpoon is six or seven fathoms long, and is called the forerunner: it is made of the finest and softest hemp, that it may slip the easier: to this they join a heap of lines of 90 or 100 fathoms each, and when there are not enough in one long-boat, they borrow from another. The man at the helm observes which way the rope goes, and steers the boat accordingly, that it may run exactly out before; for the whale runs away with the line with so much rapidity, that he would overset the boat, if it were not kept straight. After they have taken a sufficient number of whales, or when they grow too scarce to render their stay any longer advantageous, they cut them up, stow away the fat in the hold of the vessel, and leave the carcasses to be devoured by the bears, who are very fond of the flesh. Nothing then remains but to sail homewards, where the fat is melted down into oil.——The *Southern Whale Fishery* consists of three distinct branches; viz. 1st, the spermaceti whale, which is found in all tropical climates, but especially on the coasts of New Zealand and Japan: the ordinary duration of the voyage of a ship from England, employed in this department of the fishery, is about three years. 2d, the common black whale of the southern seas, met with principally on the coast of Brazil. And, 3d, the sea elephant, or southern walrus, met with in the seas near California, and the islands of Desolation, South Georgia, &c. Vast numbers of these animals are annually captured, and they furnish an abundance of oil.—— It appears that, while our northern whale fishery has long been declining, the American southern whale fishery has risen into great importance. It is, however, very generally believed, that in the south, as well as in the north, there is a very perceptible decrease in the supply of fish, and that the whale fisheries have consequently passed their zenith.——Besides, the before-mentioned fisheries, there are several others both on the coasts of Great Britain and in the North Seas, which although not much the subject of merchandize, employ great numbers both of ships and men; as, the *oyster* fishing at Colchester, Feversham, the Isle of Wight, in the Swales of the Medway, &c.; and the *lobster* fishing all along the British channel, the Firth of Edinburgh, on the coast of Northumberland, on the coast of Norway, &c. &c.

FISH'ING, the art of catching fish, whether by means of nets, or of spears, lines, rods, and hooks. By several statutes it is provided, that no person shall fish in any pond or moat, without the owner's consent, on pain of three months imprisonment: nor shall any one take fish in a river without a licence obtained from the owner, upon forfeiture of 10*s.* to the poor, and triple damages to the party aggrieved.

FISH'ING-FROG, in ichthyology, the

THE DOGGER-BANK, IN THE NORTH SEA, 190 MILES LONG, IS THE FAVOURITE RESORT OF TURBOT, COD, SOLES, HERRINGS, &c.



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*Lophius* or toad-fish, whose head is larger than its body.

FIS'ILE, an epithet often used in mineralogy, &c., for that which may be cleft or divided in the direction of the grain, or of natural joints.

FIS'IPED, in zoology, an epithet for an animal whose toes are separate, or not connected by a membrane.

FIS'SURE, a narrow chasm made by the parting of any substance.——In surgery, a crack or slit in a bone, either transversely or longitudinally.

FIS'TULA, in surgery, a deep, narrow, and callous ulcer, generally arising from abscesses.——*Fistula-lachrymalis*, a disease which attacks the great caruncle in the inward corner of the eye; a disorder accompanied with a flowing of tears.——*Fistula*, an ancient musical instrument resembling our common flute or flageolet.

FIS'TULAR, among botanists, an epithet applied to leaves and flowers that are tubular, or resemble a hollow pipe.

FIS'TULIFORM, in mineralogy, an epithet for such substances as are in round hollow columns.

FIT, a sudden and violent attack of disorder, in which the body is often convulsed, and sometimes senseless; as a *fit* of apoplexy or epilepsy, &c. We also apply the word to the first attack or the return of certain diseases; as, a *fit* of the gout, &c.

FITCH'ET, an animal of the weasel or ferret kind; the polecat.

FIXA'TION, in chemistry, the making any volatile spirituous body endure the fire.

FIX'ED AIR, the name formerly given by chemists to the air which was extricated from lime, magnesia, and alkalies, now commonly called carbonic acid gas, [which see].

FIX'ED OILS, in chemistry, such oils as are obtained by simple pressure; in distinction from volatile or essential oils.

FIX'ED STARS, in astronomy, such stars as always retain the same apparent position and distance with respect to each other; and are thus distinguished from planets and comets, which are revolving bodies.

FLAG, a general name for colours, standards, banners, ensigns, &c.——*To strike or lower the flag*, is to pull it down upon the cap in token of respect or submission.——*To strike the flag* in an engagement, is the sign of surrendering.——*To hang out the white flag*, is to ask quarter; or in some cases, it denotes that the vessel has no hostile intention, but comes to trade, &c. The *red flag* is a sign of defiance and battle.——*To hang the flag half-mast high*, is a token or signal of mourning.

FLAG, in botany, a sort of rush, or aquatic plant with a bladed leaf. There are different kinds, as the common flag, or water iris, that grows in rivers and bears a yellow flower; the corn flag, or gladiole, a bulbous plant; and the sweet flag, a perennial; which two last are cultivated in gardens.

FLA'GELLANTS, in church history, a fanatical sect in the 13th century, who maintained that remission of sins was not to be obtained without flagellation. Accordingly, they walked in procession, preceded by priests carrying the cross, and publicly lashed themselves till the blood ran down their naked bodies.

FLAG'-OFFICERS, those who command the several squadrons of a fleet; as admirals, vice-admirals, and rear-admirals. [See ADMIRAL.]

FLAG'-SHIP, a ship commanded by a flag-officer, who has a right to carry a flag, in distinction from the secondary vessels under his command.

FLAME, the small parts of an inflammable or unctuous body, that are set on fire, or briskly agitated or thrown off, with a certain vibrative motion at the surface of that body into the open air. Simple ignition never exceeds in intensity of light the body by the contact of which it is produced: but flame consists of volatile inflammable matter, in the act of combustion, and combination, with the oxygen of the atmosphere. Many metallic substances are volatilized by heat, and burn with a flame, by contact of the air in this pure state. Dr. Ure observes, that the flame of combustible bodies may, in all cases, be considered as the combustion of an *explosive mixture* of inflammable gas or vapour with air. It cannot be regarded as a mere combustion at the surface of contact of the inflammable matter. This fact is proved by holding a taper, or a piece of burning phosphorus, within a flame made by the combustion of alcohol. The flame of the taper, or of the phosphorus, will appear in the centre of the other flame, proving that there is oxygen even in its interior part.

FLA'MEN, in Roman antiquity, the name of an order of priests, instituted by Romulus or Numa; authors not being agreed on this head. Originally there were three priests so called; the *Flamen Dialis*, consecrated to Jupiter; *Flamen Martialis*, sacred to Mars; and *Flamen Quirinalis*, who superintended the rites of Quirinus or Romulus.

FLAMIN'GO, in ornithology, a fowl constituting the genus *Phœnicopterus*, of the grallic order; a native of Africa and America. It resembles the heron in shape, but is entirely red, except the quill-feathers.

FLANK, the side of an army, or a battalion encamped on the right and left.——In fortification, that part of a bastion which reaches from the curtain to the face; or any part of a work that defends another work along the outside of its parapet.

FLAN'NEL, a slight, loose, woollen stuff, which serves to keep the body warm, because, from its light and spongy texture, it does not admit of a passage for the heat.

FLAT, in music, a character which lowers a note one semitone.

FLATTING, in gilding, is the giving the work a light touch, in the places not burnished, with a pencil dipt in size, in which a little vermillion is sometimes mixed.

FLAT'ULENCE, in medicine, air generated in a weak stomach and intestines by



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THE NAKED EYE CAN DISCRIMINATE STARS TO THE SIXTH OR SEVENTH MAGNITUDE; TELESCOPES CAN REACH EVEN TO A 16TH.

SEVERAL EARTHY BODIES, BUT MORE ESPECIALLY LIME, ARE REMARKABLE FOR THE GREAT LIGHT THEY GIVE WHEN IGNITED.

imperfect digestion, occasioning distension, uneasiness, and frequent eructations.

FLAX, a plant, from the fibres of which linen thread is made. Common flax is an annual; but the other kinds are perennials.

FLEA, in entomology, an insect of the genus *Pulex*. It is of a deep purple colour, and is remarkable for its agility in leaping, for which it has three pairs of legs. It sucks the blood of larger animals, and its bite is very troublesome. The muscular power of the flea is truly wonderful. It has been known to draw 70 or 80 times its own weight, resist the ordinary pressure of the fingers in our endeavours to crush it, and leap two hundred times its own length. Hence it is called by the Arabians, "the father of leapers." Supposing the same relative force to be infused into the body of a man six feet high, he would be enabled to leap three times the height of St. Paul's! Latreille tells us of a flea which dragged a silver cannon twenty-four times its own weight, mounted on wheels, and was not alarmed when this was charged with gunpowder and fired off. And there is no reason to doubt the assertion; inasmuch as the feats of the "industrious fleas," exhibited in London, are not a whit less marvellous.

FLEAM, an instrument for lancing the gums or bleeding cattle.

FLEECE, a flock of wool, or what comes from a sheep at one shearing.——*Order of the Golden Fleece*, an order of knighthood instituted by Philip II. duke of Burgundy.

FLEET, a squadron of ships of war, belonging to any prince or state. It also denotes any number of trading ships, employed in a particular branch of commerce. Merchant-fleets generally take their denomination from the place they are bound to, as the Turkey-fleet, East-India-fleet, &c. These, in times of peace, go in fleets for their mutual aid and assistance: in time of war, besides this security, they procure convoys of men of war, either to escort them to the places whither they are bound, or to a certain place or latitude.——It is also the name of a prison in London, where debtors are confined; and to which persons are committed by the courts of chancery and common-pleas. It is situated in Farringdon-street, and derives its name from the float or fleet of the river, which, like an uncovered sewer, formerly ran near the building, and was called Fleet-ditch. *Fleta*, from the Saxon *fleot*, signifies, in barbarous Latin, a place where the tide comes up.

FLESH, in anatomy, the muscular part of an animal body, in which the blood-vessels are so small as to retain only blood enough to give them a red colour.——*Flesh*, in botany, the pulpy substance of any fruit or root.

FLEX'OR, in anatomy, a name applied to several muscles, whose office it is to bend the parts to which they belong; in opposition to the *extensors*, which open or stretch them.

FLEX'URE, in geometry, the bending or curving of a line or figure: thus, when a line first bends one way and then another, the point where the bend changes to the other side is called the "point of contrary flexure."

FLINT, in natural history, a semi-pellucid stone, being a subspecies of quarts, of one uniform substance, and free from veins; but of different degrees of colour, and surrounded with a whitish crust. Flints occur almost always in nodules or tubercular concretions of various and very irregular forms. They break with an even, glossy surface; are moderately transparent, very hard, and capable of a fine polish; readily strike fire with steel; make not the least effervescence with aquafortis, and burn to a whiteness. The uses of flint, as an ingredient in the manufacture of glass and fine pottery-ware, are described under the proper heads.

FLITCH, in naval language, the name of a piece of small timber applied to ships for the purpose of sawing up into boat-timber.

FLOAT, a raft or number of pieces of timber fastened together with rafters athwart, to be driven down a river with the tide.——*Floating Breakwater*, a marine contrivance, consisting of a series of square frames of timber, connected by mooring chains or cables, and intended to break the violence of the agitated waves; either to allow vessels to ride within these quadrangular basins with more safety, or to produce smooth water in bathing places on a rough coast.——*Floating-bridge*, in war, a kind of double bridge, the upper one projecting beyond the lower one, and capable of being moved forward by pulleys, used for carrying troops over narrow moats in attacking the outworks of a fort. Floating-bridges of a very large size have also of late been constructed for the transit of passengers and goods across creeks, harbours, &c., by the application of steam-power.——*Floating-light*, on shipboard, a hollow vessel of tinned iron-plate, made in the form of a boat, with a reflector or lanthorn, for the purpose of saving those who may have the misfortune to fall overboard in the night.——*Floating battery*, vessels used as batteries to cover troops in landing on an enemy's coast.——*Float-boards*, those boards fixed to water wheels of under-shot mills, serving to receive the impulse of the stream, by which the wheel is carried round.

FLOATING *(the art of)*. The following information, derived from an unique publication by Mr. Walker, is worth remembering:—"Any human being who will have the presence of mind to clasp the hands behind the back, and turn the face towards the zenith, may float at ease, and in perfect safety, in tolerably still water—ay, and sleep there, no matter how long. If not knowing how to swim, you would escape drowning when you find yourself in deep water, you have only to consider yourself an empty pitcher; let your mouth and nose, not the top part of your heavy head, be the



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highest part of you, and you are safe; but thrust up one of your bony hands, and down you go; turning up the handle tips over the pitcher. Having had the happiness to prevent one or two drownings by this simple instruction, we publish it for the benefit of all who either love aquatic sports or dread them."

FLOETZ, or FLETZ, in geology, horizontal beds or strata, which lie over the transition rocks, and of which there are two formations, one called floets, or secondary, containing the petrified remains of animalcula, and vegetables now extinct; and the other, consisting of similar formations, and the alluvial soils lying upon them, containing the remains of animals similar to those now in existence, and consisting of basalt, wacke, greystone, slate, coal, trap, sand, loam, fragments of ore, &c.

FLOOD, a body of water, rising, swelling, and overflowing land not usually covered with water.——By way of eminence, the universal deluge is called *the flood*.

FLOOD'-GATE, a sluice or gate that may be opened or shut, for the admission or exclusion of the water.

FLOOD'-MARK, the mark which the sea makes on the shore, at the highest tide; high water mark.

FLORA'LIA, a feast kept by the Romans in honour of the goddess Flora. This feast began April the 25th, and continued till the first of May, during which time the *Ludi Florales* were celebrated.

FLORID STYLE, in literary composition, that which is too much enriched with figures and flowers of rhetoric. Longinus uses the terms *florid* and *affected style* indifferently, and describes them as quite contrary to the true sublime.——The *florid style* of architecture, or *florid Gothic*, an elaborate kind of Gothic architecture, filled with points, ramifications, mullions, &c. ——*Florid*, in music, any composition or performance of a rich and embellished kind.

FLO'RIN, a coin of different value; the silver florin of Holland is worth about 1*s*. 8*d*. Most of the gold florins are of a coarse alloy, weighing variously from about fourteen to seventeen carats.

FLORES'CENCE, in botany, the season when plants expand their flowers.

FLOSS'-SILK, the name given to the portions of ravelled silk broken off in the filature of the cocoons. It is carded like cotton or wool, and spun into a soft coarse yarn or thread, for making shawls, socks, and other articles where an inferior kind of silk may be used.

FLOS, in botany, the name of several species of plants. Also the general name for the flower.

FLOS'CULE, in botany, a partial or lesser floret of an aggregate flower.

FLOS'CULOUS, in botany, an appellation given to compound flowers, made up of a number of florets in funnel-shaped petals, and inclosed in the same common cup.

FLOS FER'RI, in mineralogy, a variety of arragonite, occurring in little cylinders, sometimes diverging and ending in a point, and sometimes branched, like coral. It is found in veins of sparry iron, from which it takes its name

FLOT'SAM, in law, a term for goods lost by shipwreck, but which are floating on the sea.——There are two other uncouth terms made use of to describe wrecked goods, viz., *jetsam* and *lagan*; the former, when the goods are sunk; and the latter, when they are sunk, but tied to a cork or buoy to be found again.

FLOUR, the finely ground and sifted meal of wheat or other grain. [See BREAD.]

FLOURI'SH, in music, a prelude or preparatory air, without any settled rule: also the decorative notes which a singer or instrumental performer occasionally introduces.——In military language, it is the sounding of trumpets on receiving an officer or other person of distinction.

FLOW'ER, that beautiful part of a plant we call the blossom; the parts or divisions of which are called petals. It contains the parts of fructification, or the germ of the fruit; and consists of a calyx, corolla, stamen, and pistil.——A writer in the New Monthly Magazine thus picturesquely describes the blooming flowers on the Alps: —"Wherever there is a handful of earth, there also is a patch of wild flowers. If there be a crevice in the rock sufficient to thrust in the edge of a knife, there will the winds carry a few grains of dust, and there straight up springs a flower. In the lower parts of the Alps they cover the earth with beauty. Thousands, and tens of thousands, blue, and yellow, and pink, and violet, and white, of every shadow and every form, are to be seen, vying with each other, and eclipsing every thing besides. Midway they meet you again, sometimes fragrant, and always lovely; and in the topmost places, where the larch and pine, and the rhododendron, (the last living shrub), are no longer to be seen, where you are just about to tread upon the limit of perpetual snow, there still peep up and blossom "the Forget-me-not," the Alpine ranuncuius, and white and blue gentian, the last of which displays a blue of such intense and splendid colouring, as can scarcely be surpassed by the heavens themselves. It is impossible not to be affected at thus meeting with these little unsheltered things, at the edge of eternal barrenness. They are the last gifts of beneficent, abundant nature. Thus far has she struggled and striven, vanquishing rocks, and opposing elements, and sowing here a forest of larches, and there a wood of pines—a clump of rhododendrons, a patch of withered herbage, and, lastly, a bright blue flower."——Flowers were in great request at the entertainments of the ancients, being provided by the master of the feast, and brought in either at the beginning of the feast, or before the second course. They were likewise used by them in bedecking tombs.

FLOWERS, in chemistry, a term formerly applied to a variety of substances procured by sublimation, and were in the form of slightly colouring powder: hence, in all old



THE COLOURS OF FLOWERS DEPEND ON LIGHT, ALL OF THEM BECOMING WHITE IF THEY ARE KEPT IN TOTAL DARKNESS.

AN OVEN IS DEEMED AT ITS PROPER HEAT FOR BAKING, WHEN FLOUR THROWN INTO IT BECOMES BLACK WITHOUT FLAME.

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books, we find mention made of the flowers of antimony, arsenic, zinc, and bismuth, which are the sublimed oxydes of these metals, either pure or combined with a small quantity of sulphur: we have also still in use, though not generally, the terms flowers of sulphur, benzoin, &c.

FLOWERS, ARTIFICIAL, a considerable article of manufacture, particularly in France, where they are made with astonishing skill and taste, and give employment to an immense number of hands.—The savages of South America manufacture perfect feather flowers, derived from the brilliant plumage of their birds, which closely resemble the products of vegetation; and with this advantage, that the colours never fade.

FLOWER-DE-LIS, (sometimes written, incorrectly, *flower-de-luce*), in heraldry, a bearing representing the lily, the hieroglyphic of royal majesty.—In botany, the iris or flag-flower.

FLOWERS, LANGUAGE OF. Among oriental nations the language of flowers, as it is called, has acquired a significant character. Dr. Madden, in his travels, alluding to this has the following passage:—"A Turkish lady of fashion is wooed by an invisible lover. In the progress of the courtship, a hyacinth is occasionally dropped in her path by an unknown hand, and the female attendant at the bath does the office of a Mercury, and talks of a certain effendi seeking the lady's love, as a nightingale aspiring to the affections of a rose." The charm of novelty has sometimes attracted attention in the Western world to this tender language, and dictionaries have been composed to explain its mysteries; but it is only among the lively and imaginative mortals of the East, that it has ever been brought to perfection.

FLU'ATES, in chemistry, salts of which the fluoric acid is the chief ingredient. They are distinguished by the following properties:—When sulphuric acid is poured upon them, they emit acrid vapours of fluoric acid, which corrode glass; when heated, several of them phosphoresce; they are not decomposed by heat, nor altered by combustibles; and they combine with silica by means of heat. Most of them are sparingly soluble in water.

FLU'ID, in physiology, an appellation given to all bodies whose particles easily yield to the least partial pressure, or force impressed; moving easily among themselves, and accommodating themselves to all changes of position, so as always to preserve a level surface. From the gravity of fluids arises their pressure, which is always proportioned to the gravity: for if the particles of fluids have equal magnitude and weight, the gravity or pressure must be proportioned to the depth, and equal in every horizontal line of fluid.—*Fluidity* stands directly opposed to solidity or firmness, and is distinguished from liquidity and humidity, inasmuch as the latter imply also wetting and adhering. Melted metals, air, ether, smoke, and flame, are fluid but not liquid bodies, their parts being dry, and leaving no sense of moisture. Fluidity is the effect of heat.

FLUOR'IC ACID, in chemistry, a gaseous substance procured from fluor spar, which is of a corroding nature, and will dissolve glass, for which reason it has been used for etching on glass. This acid gas readily combines with water; and when dropped in, a hissing noise is produced with much heat. Its odour is very penetrating, and its vapour dangerous to inspire. When applied to the skin, it instantly disorganizes it, and produces the most painful wounds. This gas has received the name of *fluo-silicic acid*, because it is regarded as a compound of fluoric acid and silica.

FLU'ORINE, in chemistry, the supposed basis of fluoric acid.

FLU'OROUS ACID, in chemistry, the acid of fluor in its first degree of oxygenation.

FLU'OR SPAR, in mineralogy, the foliated fluate of lime; a species of mineral which abounds in nature, and consists of a calcareous earth in combination with fluoric acid. Though sometimes massive, it is almost always regularly crystalized. The variously-coloured specimens called *Derbyshire spar*, are worked upon the turning-lathe into vases and other ornaments.

FLUOSIL'ICATE, in chemistry, a compound of fluoric acid, containing silex, with some other substance.

FLUOSILI'CIC, in chemistry, an epithet for that which is composed of or contains fluoric acid with silex.

FLUSH, a term in a game at cards where they are all of a suit.—In carpentry, a term signifying that two bodies joined together make an even surface.

FLUTE, *the common or English*, a musical wind instrument, consisting of a tube about eighteen inches in length, furnished with holes at the side for the purpose of varying its sounds by stopping and opening them with the fingers.—The *German flute* is formed of several joints or pieces screwed into each other, with holes at the side, and the addition of several brass or silver keys, to temper the tones to the various flats and sharps.

FLUTES, or FLU'TINGS, in architecture, perpendicular channels, or cavities, cut along the shaft of a column or pilaster. They are chiefly effected in the Ionic order, where they had their first rise; though they are also used in the richer orders, as the Corinthian and Composite; but seldom in the Doric, and scarcely ever in the Tuscan. Each column has twenty-four flutes, and each flute is hollowed in exactly a quadrant of a circle. The Doric, however, has but twenty. Between the flutes are little spaces that separate them, called *stria* or *listæ*: though, in the Doric, the flutes are frequently made to join to one another, without any intermediate space at all; the list being sharpened off to a thin edge, which forms a part of each flute. Fluted columns are sometimes, though improperly, termed *reeded*.



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THE FOOT OF A FLY IN SHAPE RESEMBLES A CURYCOMB, AND WITH IT THEY BRUSH OFF THE DUST FROM THEIR HEAD AND WINGS.

A DETACHMENT OF TROOPS EMPLOYED TO HOVER ABOUT AND WATCH THE MOTIONS OF AN ENEMY, IS CALLED A "FLYING-PARTY."

**FLUX**, in chemistry, a general term to denote any substance or mixture added to assist in the fusion of minerals. The fluxes made use of in experiments consist usually of alkalies, which render earthy mixtures fusible, by converting them into glass; or by converting glass itself into powder. Limestone, fluor spar, borax, and several earthy or metallic oxydes, are employed as fluxes in metallurgy.——*Flux*, in medicine, an extraordinary issue, or evacuation of some humours of the body.——*Flux and Reflux*, the regular and periodical motion of the sea, which happens twice in 24 hours, 48 minutes. By the flux, or advancing motion of the tide, the water rises; by the reflux, or ebbing of the tide, it sinks; and the period at which the water is in a manner at rest, is called *high-water*.

**FLUXIONS**, a method of calculation invented by Sir Isaac Newton. In this branch of mathematics, magnitudes of every kind are supposed to be generated by motion. This science is employed in the investigation of curves, in finding the contents of solids, and computing their surfaces; in finding the centres of gravities and oscillation of different bodies; the attractions of bodies under different forms; the direction of wind, which has the greatest effect on an engine; and in the solution of many other interesting and important problems.

**FLY**, in zoology, a winged insect of various species, the distinguishing characteristic of which is, that their wings are transparent. By this, flies are distinguished from beetles, butterflies, grasshoppers, &c. Some flies have two wings, and others four. ——*Fly*, in mechanics, a heavy wheel at right angles with the axis of a windlass or jack, to regulate the motion of a machine. When used as a collector of power, the fly is frequently seen with heavy knobs at the opposite ends of the straight line.——*Fly*, among mariners, that part of a compass on which the thirty-two points are described.

**FLY-BLOW**, the deposit of eggs by flies, which afterwards become maggots, as the grub state of future flies.

**FLY-CATCHER**, in ornithology, a genus of birds, the *Muscicapa*, with a bill flattened at the base, almost triangular, notched at the upper mandible, and beset with bristles. They are of infinite use in destroying those numerous swarms of noxious insects engendered by heat and moisture, which are continually on the wing, and which, though weak and contemptible when individually considered, are formidable to vegetation by their numbers.

**FLY'ERS**, in architecture, stairs that do not wind, but are made of an oblong square figure, and go straight forward, the second standing behind the first, and so on.

**FLY-HON'EYSUCKLE**, in botany, a shrub; the *Halleria lucida* of Linnæus.

**FLY'ING**, the progressive motion of a bird, or other winged animal, in the liquid air. The parts of birds chiefly concerned in flying, are the wings, by which they are sustained or wafted along. "The manner of flying is this: the bird first bends his legs, and springs with a violent leap from the ground; then opens and expands the joints of his wings, so as to make a right line perpendicular to the sides of his body: thus the wings, with all the feathers therein, constitute one continued lamina. Being now raised a little above the horizon, and vibrating the wings with great force and velocity perpendicularly against the subject air, that fluid resists those successions, both from its natural inactivity and elasticity, by means of which the whole body of the bird is protruded. The resistance the air makes to the withdrawing of the wings, and consequently the progress of the bird, will be so much the greater, as the waft or stroke of the fan of the wing is longer: but as the force of the wing is continually diminished by this resistance, when the two forces come to be in equilibrio, the bird will remain suspended in the same place; for the bird only ascends so long as the arch of air the wing describes makes a resistance equal to the excess of the specific gravity of the bird above the air. If the air, therefore, be so rare as to give way with the same velocity as it is struck withal, there will be no resistance, and consequently the bird can never mount." Birds never fly upwards in a perpendicular line, but always in a parabola. In a direct ascent, the natural and artificial tendency would oppose and destroy each other, so that the progress would be very slow. In a direct descent they would aid one another, so that the fall would be too precipitate.

**FLYING-FISH**, the *Exocætus* of naturalists; a fish which is enabled, by the vibration of its large pectoral fins, to leave the water when alarmed or pursued, and sustain itself for several seconds in the air. In tropical seas they rise from the water in shoals, of thousands at a time, when disturbed by the passing of a ship, or pursued by a dolphin. They spring from the crest of a wave, and, darting forward, plunge into another to wet the membrane of the fins, and in this manner continue their flights for several hundred yards together. [See EXOCÆTUS.]

**FLYING-PIN'ION**, the part of a clock, having a fly or fan, by which it gathers air, and checks the rapidity of the clock's motion, when the weight descends in the striking part.

**FLY-OR'CHIS**, in botany, the *Orchis muscifera*, a plant, so called from the resemblance it bears in figure to that of a fly.

**FLY'TRAP**, in botany, a species of sensitive plant, the *Dionæa muscipula*, or Venus' Fly-trap; the leaves of which consist of two lobes, that have the property of closing when irritated within, and consequently of seizing any insects which happen to light on them.

**FO'CAL DISTANCE**, in mathematics, the distance of the focus, which, in the parabola, is its distance from the vertex: and in the hyperbola, from the centre.



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FO'CILE MA'JUS, in anatomy, the greater bone of the arm, called *ulna*; or the greater bone of the leg, called *tibia*. The lesser bone of the arm or leg is termed *focile minus*.

FOD'DER, in husbandry, any kind of food for cattle. *Green fodder* consists of grass, tares, hay, &c. *Dry fodder*, of oats, barley, and beans.

FODDERTO'RIUM, in law, provision of fodder or forage, made to the king's purveyors.

FO'CUS, in optics, the point of convergence or concourse, where all the rays of light meet after passing through a convex lens. It should be observed, however, that the focus is not, strictly speaking, a *point*, but a small circle, one-eighth the thickness of the lens, when it is convex on both sides; for the rays are not accurately collected into one and the same place or point, owing to the different nature and refrangibility of the rays of light, to the imperfections in the figure of the lens, and other similar impediments.——*Focus*, in geometry and conic sections, a certain point in the parabola, ellipse, and hyperbola, where the rays reflected from all parts of these curves concur and meet.

FŒTUS, in physiology, signifies the young of animals while in the womb, particularly after it is formed; till which time it is more properly called an *embryo*.

FOG, an imperfect condensation of the air, consisting of a large proportion of air, and a small one of aqueous vapour. Fogs happen in winter, about the change of the weather, from frost to thaw, or from thaw to frost, but in summer and spring, from the expansion of the dew. Fogs are more frequent in those seasons of the year when there is a considerable difference of temperature in the different parts of the day; as, for instance, in autumn, when, in the warmest part of the day, the air is capable of holding a great quantity of aqueous matter in solution, which on cooling towards evening, it is no longer capable of dissolving.——A correspondent of the "Magazine of Natural History," in speaking of the density and awful blackness of a "London fog," particularly of one which occurred Jan. 27, 1831, says, "this extraordinary appearance is, however, caused by a very ordinary accident, viz. a change of wind; and which may be accounted for as follows. —The west wind carries the smoke of the city to the eastward in a long train, extending to the distance of twenty or thirty miles; as may be seen in a clear day, by any person on an eminence five or six miles from the city, and looking across in the direction of the wind; say from Harrow-on-the-Hill, for instance. In this case, suppose the wind to change suddenly to the east, the great body of smoke will be brought back by an accumulated mass, and, as this repasses the city, augmented by the clouds of smoke from every fire therein, it causes the murky darkness alluded to."

FOG'-BANK, an appearance in hazy weather, which frequently resembles land at a distance, but which vanishes as you approach it.

FOIL, among jewellers, a thin leaf of metal placed under precious stones, to increase their lustre and improve their colour. Hence anything of a different colour or quality, which serves to adorn or set off another thing to advantage, is termed a *foil*.——In fencing, an elastic piece of steel, or sword without a point, to fence with by way of exercise. The *foil* usually has a button or piece of cork at the end, covered with leather.

FOLIA'CEOUS, in botany, having leaves intermixed with flowers; as, a *foliaceous* spike.——In mineralogy, having the form of a leaf or plate; as, *foliaceous* spar.

FO'LIAGE, in architecture, the representation of leaves, flowers, and branches, intended to ornament and enrich capitals, friezes, pediments, &c.

FO'LIATE, in botany, furnished with leaves.

FO'LIATED, in mineralogy, consisting of thin plates; lamellar; as, a *foliated* structure.

FO'LIATING, a term used for covering the backs of looking-glasses with a thin coat of tin and quicksilver.

FOLIATION, in botany, the leafing of plants, or the disposition of the nascent leaves within the bud.

FO'LIO, in account books, denotes a page, or rather both the right and left hand pages, these being expressed by the same figure.——*Folio*, a book of the largest size, the leaves of which are formed by once doubling a sheet of paper.

FO'LIOLE, in botany, one of the single leaves, or leaflets, which together constitute a compound leaf.

FO'LIOUS, in botany, having leaves intermixed with the flowers.

FO'LKLAND, in law, copyhold land; or land held by the commonalty at the will of the lord.

FO'LKMOTE, a word used in England before the Norman conquest to denote an annual assembly of the people, answering in some measure to a modern parliament. Some authors however, allege that the folkmote was an inferior court, or common-council of a city or borough.

FOL'LICLE, in botany, a seed-vessel opening on one side longitudinally, and having the seeds loose in it.

FOMENTATION, the act of bathing any part of the body with a decoction of herbs, &c. made hot, for the purpose of easing pain or dispersing tumours. A similar application with bags of herbs and other ingredients is called a dry fomentation.

FONT, a large basin or stone vessel in which water is contained for baptising infants, or other persons. It is so called, probably, because baptism was usually performed among the primitive Christians at springs or fountains.——*Font*, or *Fount*, a complete assortment of printing types of one size, including a due proportion of all the letters, points, figures, accents, &c.



CLOUDS, FOGS, AND MISTS, ARE ALL ALIKE; THE VAPOUR AT A DISTANCE WE CALL A CLOUD; WHEN WE ARE IMMERSED IN IT, A FOG.

IN 1783, ALL EUROPE WAS ENVELOPED WITH A DRY FOG, AT THE MOMENT OF A VOLCANIC ERUPTION IN ICELAND AND CALABRIA.

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IN GOOD BREAD, EVERY 100 LBS. IS FOUND TO CONTAIN 80 LBS. OF NUTRITIOUS FOOD; BUTCHER'S MEAT AVERAGES ONLY 35 LBS. IN 100.

POTATOES YIELD 25 LBS. OF NUTRIMENT IN 100; CARROTS, 14 LBS.; AND GREENS, ONLY 8 LBS.; WHILE FRENCH BEANS, IN THE GRAIN, YIELD 92 LBS.

FONTINA'LIA, in Roman antiquity, a religious feast celebrated Oct. 13, in honour of the nymphs of wells and fountains. The ceremony consisted in throwing nosegays into the fountains, and putting crowns of flowers upon the wells.

FOOD, in its largest sense, direct and metaphorical, includes whatever is taken for nourishment; in reference to the animal economy, whatever solid or liquid aliment is received into the stomach; and, in a more confined sense, solid aliment only. After being masticated in the mouth, our food passes through the gullet, into the stomach, where it is reduced to a pulp, called chyme. This passes into the pylorus and duodenum, where it is separated into chyle, which is absorbed by the lacteal vessels of the animal, and the superfluous parts are ejected through the colon and rectum.——We are told that in the first ages men lived upon acorns, berries, and such fruits as the earth spontaneously produces; then they proceeded to eat the flesh of wild animals taken in hunting: but their numbers decreasing, and mankind multiplying, necessity taught them the art of cultivating the ground, to sow corn, &c. When they began to make a free use of domestic animals, they roasted them only; boiling was a refinement in cookery which for ages they were strangers to; and fish, living in an element men were unused to, were not eaten till they grew somewhat civilized.

FOOL, in ordinary language, signifies one who is deficient in intellect, or who pursues a course contrary to the dictates of reason. In scripture the word *fool* is often used for a wicked or depraved person. But in its most legitimate sense, the term *fool* means one who is destitute of reason; either from having been born an idiot: or become idiotic from some injury done to the brain.——*To play the fool*, to act the buffoon; to occupy one's time in absurd trifling.

FOOT, the lower extremity of the leg, or that part of the body of most animals whereon they stand. Animals are distinguished, with respect to the number of their feet, into *bipeds*, two-footed; as men and birds; *quadrupeds*, four-footed; like most land animals; and *multipedes*, or many-footed, as insects.——*Foot*, a measure of length, consisting of 12 inches; supposed to be taken from the length of a man's foot. Geometricians divide the foot into 10 digits, and the digit into 10 lines.——A *Foot square*, is the same measure, both in breadth and length, containing 144 square or superficial inches.——And a *cubic or solid foot* is the same measure in all the three dimensions, length, breadth, and depth or thickness, containing 1728 cubic inches.——*Foot*, in poetry, a certain number of syllables which serve for measuring the verse.——*Foot*, in military language, soldiers who serve on foot; or infantry, as distinguished from cavalry.

FOOT'STALK, in botany, a partial stem supporting the leaf, or connecting it with the stem and branch; a petiole.

FOR'AGE, all kind of provender for cattle, especially for horses in time of war.——*A foraging party*, those who are sent out by the general in order to collect provisions either for the horses or for the troops.

FORA'MEN, in anatomy, a name given to several apertures, or perforations in various parts of the body; as, 1. the external and internal foramina of the cranium or skull; 2. the foramina in the upper and lower jaw; 3. the foramen lachrymale; and, 4. the foramen membranæ tympani.——*Foramen ovale*, an oval aperture or passage through the heart of a fœtus, which closes up after birth. It arises above the coronal vein, near the right auricle, and passes directly into the left auricle of the heart, serving for the circulation of the blood in the fœtus, till such time as the infant breathes and the lungs are open.

FORCE, in mechanics, the energy or impulse with which one body affects another, with reference to the direction of motion, and the centres of the masses. It consists in the transfer of the motion of one body to another.——*Physical force*, is the force of material bodies. *Moral force*, is the power of acting on the reason in judging and determining.——*Force*, in law, signifies any unlawful violence offered to persons or property.——*A forcible entry*, is a violent and actual entry into houses, or lands; and a *forcible detainer*, is a violent withholding the possession of lands, &c., so that the person who has a right of entry is hindered therefrom.——The word *force* has numerous other meanings; as strength or power for war—virtue—efficacy—validity—destiny—necessity, &c.

FOR'CEPS, in surgery, an instrument for extracting anything from a wound, &c. Also, a pair of scissors for cutting off or dividing the fleshy membraneous parts of the body.

FOR'CING, among gardeners, a method of obtaining fruits and flowers before their season by the application of heat.——The fining down wines so as to render them fit for immediate use, is also called *forcing*.

FORE, a sea term for near the stem; as 'fore and aft,' that is, from stem to stern.

FO'RECASTLE, a short deck in the fore part of the ship above the upper deck.

FORECLO'SE, in law, to exclude or bar the equity of redemption on mortgages, &c.

FO'REMAST, the mast of a ship which is placed in the forepart or forecastle, and carries the foresail and foretop-sail yards. *Foremast-men*, those who take in the top-sails, furl the sails, &c.

FORE-SHORT'ENING, in painting, the art of correctly conveying to the mind the impression of the entire length of an object, when represented as viewed in an oblique or receding position.

FOR'EST, a large tract of land covered with trees; differing from a *wood* chiefly in its extent.——The *forests* in England are of such great antiquity, that, excepting the New Forest in Hampshire, by William the Conqueror, and Hampton-court, by Henry



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VIII. it is said that there is no record or history, which makes any certain mention of their origin, though they are mentioned by several writers, and in many of our laws and statutes. The four principal forests are the New-forest, Sherwood-forest, Dean-forest, and Windsor-forest.

FO'RESTALLING, the act of buying or bargaining for any provisions or merchandize, before they reach the market to which they were going, with an intent to sell the same again at higher prices.

FO'RESTAY, in a ship's rigging, a large rope reaching from the foremast head towards the bowsprit end, to support the mast.

FOR'FEITURE, in law, the loss of some right, privilege, or estate, goods, lands, or employments, &c. for neglecting to do one's duty, or for some crime committed.

FORGE, a small furnace, wherein smiths and other artificers of iron or steel, &c. heat their metals red-hot, in order to soften and render them more malleable. The word *forge* is also used for a large furnace, or *iron-works*, in which the ore taken from the mine is melted down.

FORFIC'ULA, in entomology, the Earwig [which see.] —— *Forficula marina, or Sea-earwig*, an insect found about the seashores, and so called from its resemblance to the common earwig.

FO'RGERY, in law, the fraudulent making or altering any deed, or writing, &c. to the prejudice of another man's right, particularly the counterfeiting the signature of another with intent to defraud.

FORGET-ME-NOT, (*Myosotis palustris*) in botany, a small herbaceous plant, bearing alternate and lanceolate leaves, and small blue flowers, whose brilliancy renders them conspicuous notwithstanding their diminutive size. This little flower (owing perhaps to its clear blue, the colour of fidelity) is considered the emblem of friendship, and accordingly finds a conspicuous place in the bouquets of love and sentiment, both floral and poetical.

FORLORN-HOPE, in military affairs, a detachment of men appointed to lead in an assault, to storm a counterscarp, enter a breach, or perform any other service attended with great and imminent peril.

FORM, in physiology, the essential and distinguishing modification of the matter of which any body is composed.——*Form*, in a moral sense, the manner of being or doing a thing according to rules: thus we say, a *form* of government, a *form* of argument, &c.——*Form*, in law, the rules established and requisite to be observed in legal proceedings.——*Form*, in mechanics, a kind of mould in which any thing is wrought.——*Form* also denotes the external appearance or surface of a body, or the disposition of its parts, as to the length, breadth, and thickness.——*Essential form* is that mode of existence which constitutes a thing what it is, and without which it could not exist.

FORM (pronounced as *form*, a stool to sit on), in printing, pages or columns of type, properly arranged, and enclosed and locked in an iron frame called a chase, for the purpose of being put to press. There are two forms required for every sheet, one for each side; and each form consists of more or fewer pages, according to the size of the books.——In schools, a *class*.

FORM'ALIST, one who observes the outward forms and ceremonies of worship, for appearance' sake, without possessing the life and spirit of pure religion.

FORMA PAU'PERIS, a law term. When a person has just cause of suit, but is so poor, that he cannot defray the usual charges of suing at law or in equity, on making oath that he is not worth *5l.*, and producing a certificate from some lawyer that he has good cause of suit, the judge will admit him to sue in *forma pauperis*; that is, without paying any of the usual fees to counsel, &c.

FORMATIONS, in geology, the general name of the various strata which compose the surface of the earth, and supposed to be formed at different remote periods. In most of the formations there are some mineral and fossil affinities; and in many, even where the external differences are apparently complete, there are some common characters, by the aid of which a passage from the one to the other can be traced. It is also worthy of observation, that the unvarying succession of formations to each other, in the geological series, has been found to exist in parts of the earth widely separated from each other, and warrants not only the belief that they have come into their order successively, but that the causes which brought each formation to its place were of one class, whether of igneous or of aqueous origin, and operated simultaneously.

FOR'MIC A'CID, in chemistry, originally the acid of ants, which was extracted from them either by distillation or expression with water. At the present day *formic acid* is procured from the application of a gentle heat to a mixture of tartaric acid, water, and the protoxide of manganese. It is extremely sour, and continues liquid at very low temperatures.

FORMI'CA, the Ant [which see.]

FORMI'CA-LE'O, or Ant lion, in entomology, an insect so called from its devouring great numbers of ants. It is the caterpillar or worm of a fly much resembling the libellulæ, or dragon-flies.

FOR'MULA, in mathematics, a general theorem or literal expression for resolving any part of a problem.——*Formula*, in theology, a profession of faith.

FORT, in the military art, a small fortified place, surrounded with a moat, rampart, and parapet; or with palisades, stockades, and other means of defence.

FORTIFICA'TION, the art or science of fortifying a place, or of putting it in such a posture of defence, that every one of its parts defends, and is defended, by some other parts, by means of ramparts, parapets, moats, and other bulwarks; so that a small number of men within may be



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able to defend themselves for a considerable time against the assaults of a numerous army without.——*Ancient fortification*, at first consisted of walls or defences made of the trunks and large branches of trees, mixed with earth, to secure them against the attacks of the enemy. This was afterwards altered to stone-walls, on which were raised breast-works, behind which they made use of their darts and arrows in security.——*Modern fortification*, is that which is flanked and defended by bastions and out-works, the ramparts of which are so solid, that they cannot be beat down but by the continual fire of several batteries of cannon. The principal works belonging to a fortification are, the ditch or trench made round each work; the rampart, or elevation of earth, raised along the faces of any work, to cover the inner part; the parapet, or that part of a rampart which serves to cover the troops planted there; the bastion, that part of the inner enclosure of a fortification making an angle towards the field; the counterscarp, the slope of the ditch facing the body of the place; the covert way, the space extending round the counterscarp; and the glacis, the part beyond the covert way, to which it serves as a parapet. In recent times, however, fortification has undergone important changes, and engineers have adopted different systems; but those which have acquired the greatest reputation in Europe, are the systems of count Pagan, the baron de Coehorn, von Scheiter, and marshal Vauban.

FORTITUDE, the basis or source of coolness and intrepidity in danger, of patience in suffering, of forbearance under injuries, and of magnanimity in all conditions of life. In fine, fortitude is the virtue of a rational and considerate mind, founded on a sense of honour and a regard to duty. The motives to fortitude are many and powerful, and this virtue tends much to the happiness of the individual, by giving composure and presence of mind, and keeping the other passions in due subordination.

FORUM, in Rome, a public place where causes were judicially tried, and orations delivered to the people. There were six of these forums, viz. the *Romanum*, *Julianum*, *Augustum*, *Palladium*, *Trojanum*, and *Salustii* forum. The chief of these was the *forum Romanum*, called by way of eminence *the forum*. In this was an apartment called the rostra, where the lawyers pleaded, and the orators harangued the people, &c. Here was also the *comitium*, or hall of justice, with the sanctuary of Saturn, the temple of Castor, &c., altogether forming a most splendid place. The word *forum* was also applied to a place of traffic, or market-place: of these there were vast numbers, as the *forum piscarium*, *olitorium*, &c. These were generally called *fora venalia*, in distinction from the former, which were called *fora civilia*.——In the law, *forum* signifies a court of justice, the place where disputed rights are settled; hence *forum competens*, a competent jurisdiction; *forum incompetens*, a court not authorised to try the cause, &c.

FOSS, in fortification, a hollow ditch, commonly full of water, lying between the scarp and the counterscarp.——*Foss*, or *fosse*, in anatomy, a kind of cavity in a bone, with a large aperture, but no exit or perforation.——*Fosse*, in our ancient customs, was used to signify a ditch full of water, wherein women convicted of felony were drowned.——*Foss-way*, one of the four principal highways of England, that anciently led through the kingdom; supposed to have been the work of the Romans, and having a ditch on one side. One of these reached from Totness in Devonshire to Barton on the Humber.

FOS'SIL, in natural history, any substance penetrated with earthy or metallic particles, which is dug out of the earth, whether that be its natural or its accidental situation; the first being called native, the second extraneous.——1. *Native fossils* are substances found either buried in the earth, or lying on its surface, of a plain simple structure and showing no signs of containing vessels, or circulating juices; as earths, salts, and metallic bodies. ——2. *Extraneous fossils* are bodies of vegetable or animal origin, accidentally buried in the earth; as plants, shells, bones, &c., many of which are petrified. The oldest rocks of the secondary formation contain aquatic plants and reeds, and adjoining these are madrepores, encrinites, and various zoophytes, little removed above vegetation; in the next series are ammonites, and various mollusca, very different from any existing animals: above these are found fishes, bamboos, and ferns, all of extinct species. Between the old and the newest floets formations, shells and fish increase in number, with amphibia; as lacerta, testudo, and some serpents. In the newest floets formations are found remains of seals, whales, birds, monstrous land animals, and fresh-water shells; and in the alluvial and modern soils, in peat bogs, and low beds, bones of the elephant, rhinoceros, hippopotamus, &c. appear.

FOS'SIL-CO'PAL, a resinous substance found in perforating the bed of blue clay at Highgate, near London; which appears to be a true vegetable gum or resin, partly changed by remaining in the earth. It is sometimes called Highgate resin.

FOTH'ER, a weight of lead containing eight pigs. At the mines the weight of a *fother* is 22 cwt. and a half; but with the plumbers in London it is 19 cwt. and a half.

FOTH'ERING, a sea term for stopping leaks in the bottom of a ship, by letting down a sail by the corners, and putting chopped rope-yarn, wool, oakum, &c. between it and the ship's side. By repeating this operation several times, these substances are sometimes sucked into the cracks, and the leak becomes either wholly or partially stopped.

FOUGA'DE, in the art of war, a small mine, in the form of a well, eight or ten feet wide, and ten or twelve deep, dug un-



THE FOSSIL OR ORGANIC REMAINS IN STRATA ARE ALWAYS THE SAME KIND IN SIMILAR STRATA, WHEREVER THEY MAY BE FOUND.

REMAINS OF TURTLES, CROCODILES, AND MEGATHERS' TUSKS, HAVE BEEN DUG UP AT HIGHGATE AND HAMPSTEAD, NEAR LONDON.

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der some fortified place, charged with sacks of powder, and covered with stones or earth, for destroying the works by explosion.

FOUNDA'TION, the basis or groundwork of any thing; usually that part of a building which lies on the ground.——*Foundation* denotes also a donation or legacy, either in money or lands, for the maintenance and support of some community, school, or charitable institution.

FOUN'DER, one from whom any thing originates; as, the founder of a sect of philosophers; the founder of a family. Also one who endows any public establishment.——*Founder*, likewise implies, an artist who casts metals, in various forms, for different uses; as a founder of cannon, bells, statues, printing type, &c.

FOUN'DRY, or FOUN'DERY, signifies the house and works occupied in casting metals; and also the art of casting them into various forms for use. As, at the present day, our iron foundries are by far the most important, we shall endeavour to give (on the authority of Dr. Ure's admirable work,) a slight sketch of them:—The operations of an iron foundry consist in re-melting the pig-iron of the blast furnaces, and giving it an endless variety of forms, by casting it in moulds of different kinds. These moulds are in general very heavy, consisting of two parts at least, which must be separated, turned upside down several times, and replaced very exactly upon one another. The casting is generally effected by means of large ladles or pots, in which the melted iron is transported from the cupola, where it is fused. Coke is the only kind of fuel employed to effect the fusion. A well-mounted foundry, such as the author describes, (consisting of the various workshops, magazines for pig-iron, a vast area properly called *the foundry*, in which the moulds are made and filled with the melted metal, blast and air furnaces, &c.) will occupy a square surface of about 80 yards in each side, and will be capable, by casting in the afternoon and evening of each day, partly in large and partly in small pieces, of turning out from 700 to 800 tons per annum, with an establishment of 100 operatives, including some moulding boys. There are three distinct methods of making the moulds: 1. in green sand; 2. in baked sand; and 3, in loam. And it is of course essential,—that each mould should present the exact form of its object,—that it should have such solidity that the melted metal may be poured into it, and fill it entirely without altering its shape in any point,—and that the air which occupies the vacant spaces in it, as well as the carburetted gases generated by the heat, should have a ready vent; for if they are but partially confined, they expand by the heat, and may crack, even blow up the moulds, or at any rate become dispersed through the metal, making it vesicular and unsound. The metal is usually melted at a cupola furnace, the heat of which is so intense, from its construction and the effect of the blowing machine, that the metal begins to melt in about twenty minutes after its introduction; and successive charges are then made every ten minutes nearly, the amount of the charges varying with the size of the furnace, and the speed required for the operation; the pigs have been previously broken into pieces weighing at most 14 or 16 lbs.—The chief talent of the founder consists in discovering the most economical mixtures, and so compounding them as to produce the desired properties in the castings. One piece, for example, may be required to have great strength and tenacity to bear heavy weights or strains; another must yield readily to the chisel or the file; a third must resist sudden alternations of temperature; and a fourth must be pretty hard. The filling in of the melted metal is managed in two ways. For strong pieces, whose moulds can be buried in the ground at seven or eight yards distance from the furnace, the metal may be run in gutters, formed in the sand of the floor, sustained by plates or stones. The clay plug is pierced with an iron rod when all is ready. When from the smaller size, or greater distance of the moulds, the melted metal cannot be run along the floor from the furnace, it is received in cast iron pots or ladles, lined with a coat of loam: these are either carried by the hands of two or more men, or transported by the crane. Between the successive castings, the discharge hole of the furnace is closed with a lump of clay, applied by means of a stick, having a small disc of iron fixed at its end. After the metal is somewhat cooled, the moulds are taken asunder, and the excrescences upon the edges of the castings are broken off with a hammer; and they are afterwards more carefully trimmed or chipped by a chisel when quite cold. The loss of weight in founding is about 6¼ per cent. upon the pig-iron employed. Each casting always requires considerably more than its own weight of iron. This excess forms the gates, false seams, &c.; the whole of which being deducted, shows that 1 cwt. of coke is consumed for *every* 3 cwt. of iron put into the furnace; for every 128 cwt. of crude metal, there will be 100 cwt. of castings, 32 of refuse pieces, and six of waste.

FOUNTAIN, in natural philosophy, a spring or source of water rising out of the earth. Among the ancients, fountains were held sacred, and even worshipped as a kind of divinities.——An *artificial fountain*, or *jet d'eau*, is water ejected from a pipe, either by being raised to a higher level than the top of the pipe, or by being compressed by an engine. [See ARTESIAN WELLS.]

FOVILLA, in botany, a fine substance, imperceptible to the naked eye, emitted from the pollen of flowers.

FOX, *(Vulpes,)* in zoology, an animal of the genus *Canis*, much resembling the common dog in form, and chiefly distinguished by a long bushy tail. He burrows in the earth, and is generally described as crafty and cunning beyond measure; but much of the cunning suspiciousness of manner for





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which the fox is notorious, arises from his defective vision; in broad day-light his attitudes and motions partake of the uncertainty of his sight, and he appears to be most cunning when he is really most short-sighted. Foxes prowl about in the night, and prey on poultry, rabbits, and hares; but they are very timid, fleet, and, when old, sagacious in evading their enemies. They emit an odour which enables dogs to scent and follow them. Foxes breed only once a-year, and bring forth commonly in April four or five young, which, like puppies, are born blind.

FOX'GLOVE, in botany, the *Digitalis* of Linnæus, the species of which are mostly perennials.

FOWL, the largest sort of birds, whether domestic or wild, as geese, pheasants, partridges, &c.; also a full-grown chicken or young hen.

FOWL'ING, the art of taking or killing birds, either by means of snares or nets, or by various devices, as imitating their voices or using decoy birds and the like.

FRAC'TION, in arithmetic and algebra, a combination of numbers representing one or more parts of a unit or integer: thus four-fifths is a fraction, formed by dividing a unit into five equal parts, and taking one part four times. Fractions are divided into *vulgar* and *decimal*. Vulgar fractions are expressed by two numbers with a line between them. In these, the figure above the line is called the *numerator*, and the figure below the line the *denominator*. The theory of vulgar fractions is one of the most important in algebra, and a correct understanding of them is of great importance for the proper prosecution of arithmetical and mathematical studies.——*Decimal fractions* include every fraction, the denominator of which is ten, or a power of it. They are usually expressed by writing the numerator only, with a point before it by which it is separated from the whole number; thus .5, which denotes five-tenths, or half the whole number: .25, that is, a fourth part of the whole number.

FRACTURE, in mineralogy, the manner in which a mineral breaks, which is one of its specific characters. The fracture is either compact or smooth, foliated or lamellar, conchoidal, striated, or nodular, &c.——*Fracture*, in surgery, the breaking of any bone by an external act of violence. It is *simple* when the bone only is divided; *compound*, when the bone is broken, with a laceration of the integuments.

FRÆ'NUM, in anatomy, a term applied to some membranous ligaments of the body; as, the *frænum linguæ*, or ligament under the tongue, which sometimes ties it down too close to the bottom of the mouth, and then requires to be incised or divided, in order to give this organ its proper and free motion.

FRAGA'RIA, in botany, a genus of plants, class 12 *Icosandria*, order 3 *Polygynia*. The species consist of several kinds of strawberries.

FRANC, a French coin, worth twenty sols, or ten-pence sterling.

FRAN'CHISE, in a general sense, signifies some privilege or exemption from ordinary jurisdiction. A franchise may be vested either in bodies politic, or corporations; in borough towns, or in individuals; as the electoral franchise. Corporate liberties being usually held by charter, are all said to be derived from the crown, but some lie in prescription without the help of any charter.

FRANCIS'CANS, Friars-Minor, or Grey-Friars, the religious order of Saint Francis, by whom they were founded about the year 1200.

FRANK, an exemption from paying postage for letters, which before the "penny-postage" bill came into operation, Jan. 10, 1840, was enjoyed to a certain extent by all members of parliament. It is said, that before this act abolished the privilege of *franking*, nine millions of letters were annually sent post-free. —— *Frank-free*, a term much used in our old law, as frank-pledge freemen, who used to be pledges or sureties for the good behaviour of those who were of their community.——*Frank-ferm*, anciently signified lands changed in the nature of the fee by feoffment, &c. out of the knight's service for other certain yearly services.——*Frank-fold*, is where the lord has the liberty of folding his tenants' sheep within his manor. —— *Frank-almoigne*, in law, a tenure by which a religious corporation holds lands to them and their successors for ever, on condition of praying for the soul of the donor.—— *Frank-chase*, or *free-chase*, is the liberty of keeping beasts of chase or royal game therein, protected even from the owner of the land himself, with a power of hunting them thereon.

FRANKINCENSE, an odoriferous, dry, resinous substance, procured from the juniper tree in Turkey and the East Indies. It is of a pale yellow colour, very inflammable, and is used as a perfume.

FRANKS, an appellation given by the Turks, and other nations of Asia, to all the people of the western parts of Europe, English, French, Italians, &c.

FRANKLINITE, a mineral compound of iron, zinc, and manganese, found in New Jersey, North America, and named from Dr. Franklin.

FRATERNITIES, in the middle ages, consisted of pious laymen who formed societies for the purpose of relieving the sick and destitute, and performing other Christian duties.

FRATRAGE, in law, a partition among brothers or co-heirs coming to the same inheritance or succession; also that part of the inheritance that comes to the youngest brothers.

FREE-BENCH', in law, a widow's dower in a copyhold estate.

FREEHOLD, that land or tenement which is held in fee simple, fee tail, or for term of life.——*Freehold in deed* is the real possession of lands, &c. in fee or for life.

THE SWIFT FOX (CANIS VELOX) INHABITS THE VAST PLAINS OF TARTARY, AND IN SPEED CAN SURPASS THE FLEETEST ANTELOPE.

THE FRANKING OF LETTERS BY MEMBERS OF PARLIAMENT WAS ESTABLISHED BY 35 GEO. III.



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——*Freehold in law* is the right a person has to such lands or tenements before his entry.

FREE'HOLDER, the possessor of a freehold estate, or of a lease for life, worth 40*s.* per annum, who is thereby qualified to vote for a knight of the shire, or representative of the county in parliament.

FREE'MAN, in ancient law, one free from servitude, as distinguished from a vassal or boudsman. At the present day, a freeman is one who enjoys the freedom of a city or borough.

FREE'STONE, a hard and durable kind of gritstone, but finer sanded, and a smoother stone. It is called free, from its being of such a nature as to cut freely in any direction: such is the Portland-stone, and the freestone of Kent.

FREE'THINKER, one who rejects revelation; or, in plain language, a deist. *Free-thinking*, in England, first appeared in the form of opposition to abuses in the church, which were attacked in the reign of James II. and William III. It possibly also originated in France from the same cause, but there it assailed all revealed religion; and it is more than probable, that to the example of those revilers of true religion, the pernicious tenets of the free-thinking or deistical school have latterly prevailed to such a frightful extent.

FREE'ZING, in philosophy, the conversion of a fluid body into a firm and solid mass by the action of cold. Upon the principle of the absorption of heat, are founded the various artificial methods of producing cold and congelation. The process of freezing may be artificially produced by means of the air pump, and sometimes by certain freezing mixtures, or compositions of such ingredients as when mixed with other bodies, cause them to congeal; such as snow and common salt, or muriate of ammonia, nitre and water, &c. Evaporation likewise produces cold. In Spain, a kind of earthern jars, called *bucaros*, is used, the earth of which is so porous, being only half-baked, that the outside is kept moist by the water that filters through it; and, though placed in the sun, the water in the jar becomes as cold as ice. It is a common practice in China, to cool wine or other liquors by wrapping a wet cloth round the bottle and hanging it up in the sun. The water in the cloth evaporates, and thus cold is produced. Ice may be produced at any time by the evaporation of ether. Water freezes when the air is 32°; wax solidifies at 150°; lead at 600°; mercury at 39° below zero.

FREIGHT, in navigation and commerce, the hire of a ship, or a part thereof, for the conveyance and carriage of goods from one place to another: or the sum agreed on between the owner and the merchant, for the hire and use of a vessel. In a more extended sense, it means the burden of such ship. Freight being the return made for the conveyance of goods or passengers to a particular destination, no claim arises for its payment in the event of a total loss; and our law authorities have decided, that in case of a total loss with salvage, the merchant may either take the part saved or abandon. But after the merchant has made his election, he must abide by it.

FRENCH CHALK, in mineralogy, a variety of indurated talc, in masses composed of small scales. It combines with grease, and is useful in drawing.

FRENCH-HORN', a musical wind instrument made of copper. It possesses a range of three octaves, and is capable of producing tones of great sweetness.

FRES'CO, a method of painting in distemper or size colours on walls, so as to endure the weather. It is performed with water colours on fresh plaster, so that the colours incorporating with it, and drying on the wall, become very durable. It is asserted that there are specimens of fresco-painting extant of the time of Constantine the Great. It was long neglected, but began to revive in the 15th century; and though Michael Angelo and Raphael produced some noble specimens of the art, it fell into disrepute until the Germans in recent times took it up again.

FRET, in architecture, an ornament consisting of two lists or small fillets variously interlaced or interwoven, and running at parallel distances equal to their breadth. ——*Fret-work* is sometimes used to fill up and enrich flat empty spaces; but is mostly practised in roofs, which are fretted over with plaster-work.——*Fret*, in heraldry, a bearing composed of six bars, crossed and interlaced; by some called a *true lover's knot*. ——*Frets*, in music, certain short pieces of wire fixed on the finger-boards of guitars, &c. at right angles to the strings, and which, as the strings are brought into contact with them by the pressure of the fingers, serve to vary and determine the pitch of the tones. Formerly these frets or stops consisted of strings tied round the neck of the instrument.——*Frets*, a term used by miners to express the worn sides of the banks of rivers in mine countries.

FRI'AR, (from the French *frere*, a brother), a term common to monks of all orders; there being a kind of fraternity, or brotherhood, between the several religious persons of the same monastery. Friars are generally distinguished into four principal branches, viz.: 1. Minors, gray friars or Franciscans; 2. Augustines; 3. Dominicans or black friars; 4. White friars or Carmelites.

FRICASSEE', a dish of food made by cutting chickens, rabbits, or other small animals into pieces, and dressing them in a frying-pan, or a like utensil.

FRIC'TION, in mechanics, the rubbing of the parts of engines and machines against each other, by which means a great part of the effect is destroyed. The causes of friction are, 1, the roughness of the contiguous surfaces; 2, the irregularity of the figure, which arises either from imperfect workmanship, or from the pressure of one body on another; 3, an adhesion, or attraction, which is more or less powerful according to

THE MOST POWERFUL MEANS OF ARTIFICIAL REFRIGERATION IS AFFORDED BY THE EVAPORATION OF LIQUEFIED CARBONIC ACID GAS.

THE FREEZING POINT DENOTES THE POINT OF DEGREE OF COLD, SHOWN BY A MERCURIAL THERMOMETER, AT WHICH CERTAIN FLUIDS BEGIN TO FREEZE.



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THE FORCE NECESSARY TO MOVE A WHEEL-CARRIAGE ON A LEVEL ROAD, IS ABOUT ONE TWENTY-FIFTH OF THE LOAD.

ACTION OR PARTING WITH MOTION BY ONE BODY, IS ALWAYS EQUAL TO THE REACTION OR RECEPTION OF IT BY ANOTHER.

the nature of the bodies in question; and 4, the interposition of extraneous bodies, such as moisture, dust, &c. It is found that the quantity of friction is always proportional to the weight of the rubbing body, and not to the quantity of surface; and that it increases with an increase of velocity, but is not proportional to the augmentation of celerity.—The resistance called *friction* performs important offices in nature and works of art. Were there no friction, all bodies on the surface of the earth would be clashing against one another; but at present whenever a body acquires a great velocity, it soon loses it by friction against the surface of the earth; the friction of water against the surfaces it runs over soon reduces the rapid torrent to a gentle stream; the fury of the tempest is lessened by the friction of the air on the face of the earth; and the violence of the ocean is subdued by the attrition of its own waters.——*Friction*, in medicine, the rubbing any part of the body with the hand, flesh-brush, flannel, or other substance, or with oils, liniments, &c., with a view to the preservation or restoration of health, and which is often found a most efficacious remedy.

FRI'DAY, the sixth day of the week, so called from Frea, or Friga, a goddess worshipped by the Saxons on this day.

FRIG'ATE, a ship of war, light built, and a good sailer. Frigates have two decks, and generally mount from twenty to forty-four guns.

FRIGATOON', a Venetian vessel built with a square stern, without any foremast: it is used in the Adriatic.

FRIEND'SHIP, a noble and virtuous attachment, between individuals, springing from a pure source: this is *true* friendship. *False* friendship may subsist between bad men, as between thieves—a temporary attachment springing from interest, which may change in a moment to enmity and rancour.

FRINGIL'LA, in ornithology, a comprehensive genus of birds, of the order *Passeres*, with the beak of a conic sharp-pointed figure, the two chaps of which mutually receive each other. To this genus belong the goldfinch, the chaffinch, greenfinch, yellow-hammer, canary-bird, linnet, sparrow, &c.

FRI'GID ZONES, in geography, the two zones or divisions of the earth, comprehended between the poles and the polar circles. They are the north frigid zone, at the north pole, and the south frigid zone, at the south pole. The frigid zone enjoys an atmospheric calm which is unknown in temperate regions: it has no storms, no hail, and scarcely a tempest; while the splendour of the aurora borealis, reflected by the snow, dispels the darkness of the polar night. The days, for several months, though of a monotonous magnificence, astonishingly accelerate the growth of vegetation. In three days, or rather, three times twenty-four hours, the snow is melted, and the flowers begin to blow.

FRIEZE, or FRIZE, in architecture, that part of the entablature between the architrave and cornice. It is usually enriched with figures of animals or other ornaments of sculpture.——A coarse kind of woollen cloth or stuff.

FRIT, or FRITT, in the glass manufacture, the matter or ingredients of which glass is to be made, after they have been calcined or baked in a furnace. It is of different kinds, according to the quality of the glass; but chiefly composed of silex and fixed alkali.

FRITH, an arm of the sea; or the opening of a river into the sea; as, the *frith* of Forth, the *frith* of Clyde, &c.——Among the Anglo-Saxons it signified a wood.

FRITH'GILD, in archæology, a guild-hall; also a company or fraternity.

FRITHBO'KEN, in law, a liberty of having frankpledge, or surety of defence.

FRITILLA'RIA, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The species are bulbous: as, the crown-imperial, Persian lily, &c.

FROG, in zoology, an amphibious animal, of the genus *Rana*, with four legs, a naked body, and no tail. It is remarkable for swimming with rapidity, and for taking large leaps on land. Frogs remain in a torpid state during winter. Besides the common frog, there are a great many other species, the most singular of which is that called the *bull-frog*, a native of the northern parts of America, with four divided toes on the fore feet, and five webbed ones on the hinder. This animal, when the limbs are extended, measures nearly two feet; the trunk of its body being about eight inches long, and four or five in breadth. It is very voracious, and frequently swallows the young of water-fowl, before they have strength to shift for themselves. Its croaking is so loud as to resemble the roaring of a bull heard at a distance, whence its name.——*Frog*, in farriery, the hard projecting substance in the hollow of a horse's foot.

FROND, in the Linnæan system of botany, a term for a kind of stem which has the branch united with the leaf, and frequently with the fructification.

FRONDES'CENCE, in botany, the precise time of the year and month in which each species of plant unfolds its leaves.

FRON'DOUS, in botany, an epithet for a flower which produces branches charged with both leaves and flowers.

FRONT, in perspective, a projection or representation of the face or forepart of an object, or of that part directly opposite to the eye, which is more usually called the orthography.

FRON'TAL, in architecture, a little pediment or front-piece over a small door or window.——In medicine, a preparation to be applied to the forehead.

FRONTA'LIS, in anatomy, an epithet for a muscle of the forehead, which serves to contract the eyebrows.

FRONT'ATED, in botany, an epithet for the leaf of a flower, which grows broader and broader, and perhaps terminates in a right line: it is used in opposition to cu-



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*pidated;* that is, when the leaves of the flower end in a point.

FRONTIE'R, the border, confine, or extreme part of a kingdom or province, bordering on another country. Frontiers were anciently called marches.

FRONTINIAC', a species of French wine, named from the place in Languedoc where it is produced.

FRON'TIS OS, in anatomy, one of the bones of the skull which joins the bones of the sinciput and temples by the coronal suture.

FRON'TISPIECE, in architecture, the principal face of a building.——An ornamental engraving fronting the first page of a book.

FROST, in physics, that state of the natural world in which the atmosphere so absorbs the caloric from bodies on the surface of the globe, as to leave them, more or less, without fluidity or expansion. Water, like the earth, seems not disposed to receive any very intense degree of cold at a considerable depth or distance from the air; the vast masses of ice found in the northern seas being only many flakes and fragments, which, sliding under each other, are, by the congelation of the intercepted water, cemented together. But near the earth's surface the power of frost is immense: a freezing liquid will burst the strongest vessels in which it is enclosed; and in a severe frost the largest oaks are sometimes known to split.—Frost, being produced by contact with the atmosphere, naturally proceeds from the external parts of bodies inwards; so the longer a frost is continued, the thicker the ice becomes upon the water in ponds, and the deeper into the earth is the ground frozen.—— *Hoar-frost* is the dew frozen or congealed early in cold mornings.

FRUCTES'CENCE, in botany, the precise time when the fruit of a plant arrives at maturity, and its seeds are dispersed.

FRUCTIFICATION, in botany, the temporary part of vegetables, appropriated to their propagation, consisting of the flower and the fruit.

FRUIT, in a general sense, signifies whatever the earth produces for the nourishment and support of animals; but in a more limited sense, the produce of a tree or other plant; as apples, pears, cherries, melons, &c. The structure and parts of different fruit differ in some things, but in all the species the essential parts of the fruit appear to be only continuations or expansions of those which are seen in the other parts of the tree; and the same fibres are continued to them from the root.

FRUMENTA'CEOUS, in botany, an epithet for plants that have their stalks pointed, and their leaves like reeds, bearing their seeds in ears, like corn.

FRUS'TUM, in mathematics, part of some solid body separated from the rest. ——*Frustum of a Cone,* the part of a cone that remains when the top is cut off by a plane parallel to the base; it is otherwise called a *truncated cone.*

FRUTES'CENT, in botany, an epithet for that which from herbaceous is becoming shrubby; as a *frutescent* stem.

FRU'TEX, in botany, a shrub; a plant having a woody durable stem, but less than a tree.

FU'CI, in botany, a genus of plants in the Linnean system, comprehending most of those which are commonly called seaweeds, from which, when burnt, an impure alkali is procured called kelp.

FU'CUS, the name given by the ancients to a sea plant, from which a dye was procured for dyeing woollen and linen cloths. ——*Fucus* is also the appellation of a paint, or composition applied on the face, to beautify it and heighten the complexion. The fucus of the Roman ladies was a kind of white earth or chalk, brought from Chio and Samos, dissolved in water.

FU'EL, any matter which serves to feed or maintain fire; as wood, coal, charcoal, peat, &c. From every combustible the heat is diffused either by radiation or direct communication to bodies in contact with the flame. In a *wood* fire the quantity of radiating heat is to that diffused by the air, as 1 to 3; or it is one fourth of the whole heating power. The radiating heat from *charcoal* fires constitutes one third of the whole emitted. The heating power of good *coke* is equal to nine-tenths of that of wood charcoal. And the radiating heat emitted by burning *pit-coal* is greater than that of charcoal. In many cases the hot air which passes into the flues or chimneys may be beneficially applied to heating, drying, roasting, &c.; but care ought to be taken that the draught of the fire be not thereby impaired, and an imperfect combustion of the fuel produced.

FU'GITIVE, in literature, short and occasional compositions either in poetry or prose; written in haste or at intervals, and considered to be fleeting and temporary.

FUGUE, in music, a species of composition, in which the different parts follow each other, each repeating in order what the first had performed.

FUL'CRUM, in mechanics, the prop or support by which a lever is sustained.—— In botany, the part of a plant which serves to support or defend it.

FULGURATION, in the art of assaying, is a term by which the sudden brightening of the melted gold and silver in the *cupel* is designated, when the last film of vitreous lead and copper leaves the surface.

FULLER'S EARTH, a soft, friable mass of lithomarge clay, unctuous to the touch, and remarkable for the property of absorbing oil, wherefore it is used by fullers to take grease out of cloth. It is found in great abundance in Bedfordshire, Berkshire, Hampshire, Surry, and some other counties. In order to prepare it for the fuller's use, it is first baked, then thrown into cold water, where it falls into powder, and the separation of the coarse from the fine is accomplished by a simple method, called washing over.

FULL'ING, the art of cleansing, scour-



AS FRUITS RIPEN, THE ORIGINAL SECRETIONS UNDERGO A GREAT CHEMICAL CHANGE, WHICH IS VASTLY PROMOTED BY HEAT AND LIGHT.

WHEN MERCURY IS FROZEN AT FORTY DEGREES BELOW ZERO, THE SENSATION IS THE SAME AS THAT OF TOUCHING RED-HOT IRON.

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EIGHT-AND-A-HALF PARTS OF GUNPOWDER EXPLODED BY A PERCUSSION CAP, HAVE AN EQUAL FORCE WITH TEN EXPLODED BY A FLINT LOCK.

ing, and pressing cloths, to make them stronger, closer, and firmer, which is done by means of a water mill, called a fulling or scouring mill.

FUL'MAR, in ornithology, a fowl of the genus *Procellaria*, or petrel kind, larger than a gull, possessing the singular faculty of spouting from its bill a quantity of pure oil against its adversary. It inhabits the Hebrides, and feeds on the fat of whales.

FULMINATION, in chemistry, explosion or detonation, accompanied with a very considerable degree of sound. All these equally imply rapid decomposition with or without flame, and the intensity of sound alone distinguishes the idea of *fulmination* from those of *detonation* and *explosion*:——*Fulmination* is also used for the denunciation, or execution of a sentence of anathema; as the *fulminations* of the Vatican.

FUL'MINATING POWDER, a powder that explodes upon the application of certain degrees of heat, with instantaneous combustion, and prodigious sound. These are sometimes made with metals, and sometimes without; as, for instance, the fulminating powder, which is made of nitre, potash, and the flowers of sulphur, triturated in a warm mortar. If this powder be fused in a ladle, and then set on fire, it will explode with a noise like thunder. If a solution of gold be precipitated by ammonia, the product will be fulminating gold, a grain of which, if held over a flame, will explode with a sharp loud noise. But of all these explosive compounds, that which in a manufacturing point of view is the most useful, is the fulminate of mercury, now so extensively used as a priming to the caps of percussion locks.

FULMIN'IC ACID, in chemistry, the explosive constituent of fulminating mercury and fulminating silver, being generated by the reaction of alcohol and the acid nitrates of these metals. All attempts to insulate fulminic acid have proved unsuccessful, as it explodes with the slightest decomposing force.

FUMIGATION, a process by means of which the nitrous and other mineral acids, in a state of vapour, are dispersed through any place, in order to purify apartments, goods, or articles of apparel supposed to be imbued with some infectious or contagious poison or fumes. The most effectual agents for this purpose are chlorine gas, muriatic acid gas, or nitric acid vapour.

FUNCTION, any office, duty, or employment belonging to a particular station or character; as, the *functions* of a judge, a bishop, &c.——*Functions*, applied to the actions of the body, are divided into vital, animal and natural. The *vital* functions are those necessary to life, and without which the individual cannot subsist; as the motion of the heart, lungs, &c. The *natural* functions are such as we cannot subsist any considerable time without; as the digestion of the aliment, and its conversion into blood. Under animal functions are included the senses of touching, tasting, &c. memory, judgment, and voluntary motion, without any of which an animal may be said to exist, though under great privations. In short, all parts of the body have their own functions, or actions peculiar to themselves. Life consists in the exercise of these functions, and health in the free and ready exercise of them.——*Function*, in algebra, denotes any compound quantity; and when one of the component quantities is variable, it is said to be a variable function.

FUNDS, a term adopted by those who speak of the public revenue of nations, to signify the several taxes that have been laid upon commodities, either by way of duties of custom, or excise, or in any other manner, to supply the exigencies of the state, and to pay interest for what sums it may have occasion to borrow.——The capital stock of a banking institution, or the joint stock of a commercial or manufacturing house, constitutes its *funds*; and hence the word is applied to the money which an individual may possess, or the means he can employ for carrying on any enterprise or operation.——The *Funding system* commenced in England shortly after the Revolution of 1688, and as the sums were at first borrowed for short periods, and partially repaid, the first transaction which assumed the character of a permanent loan was when, at the establishment of the Bank of England, in 1693, its capital, then amounting to 1,200,000*l.*, was advanced to the government.——A *sinking fund* is a sum of money appropriated to the payment of the public stock, or the payment of the public debt.

FU'NERAL RITES, ceremonies accompanying the interment or burial of any person. These rites differed among the ancients according to the different genius and religion of each country. The ancient Christians testified their abhorrence of the pagan custom of burning the dead; and always deposited the body entire in the ground; and it was usual to bestow the honour of embalming upon the martyrs, at least, if not upon others.

FU'NERAL GAMES. The celebration of these games among the Greeks, mostly consisted of horse-races: the prizes were of different sorts and value, according to the quality and magnificence of the person that celebrated them. The garlands, given to victors on this occasion, were usually of parsley, which was thought to have some particular relation to the dead. Among the Romans, the funeral games consisted chiefly of processions; but sometimes also of mortal combats of gladiators, around the funeral pile.

FUN'GATE, in chemistry, a compound of fungic acid and a base.

FUN'GIC ACID, in chemistry, an acid obtained from mushrooms.

FUN'GIN, the fleshy part of mushrooms, now considered as a peculiar vegetable principle.

FUN'GITE, a kind of fossil coral.

FUN'GIFORM, in mineralogy, having a termination similar to the head of a fungus.

ALL REAL MUSHROOMS HAVE A PLEASANT TASTE, AND MAY THEREBY BE DISTINGUISHED FROM ANY KIND OF FUNGUS THAT IS POISONOUS.



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FUN'GUS, in botany, an order of vegetables, belonging to the *cryptogamia* class of Linnæus. The fungi have so little of the common and general appearance of vegetables, that many have denied them to be such, and contended for their being only excrementitious matter, protruded from decaying vegetables of other kinds. The word is also applied to excrescences on plants.——In surgery, the term *fungus* is applied to any morbid excrescence, whether in wounds or arising spontaneously.

FUR'LONG, a long measure, equal to 1-8th of a mile, or forty poles. It is also used in some law-books, for the eighth part of an acre.

FUR'LOUGH, leave granted to a non-commissioned officer or soldier to be absent for a given time from his regiment.

FUR'NACE, an apparatus for melting metals, &c., variously constructed, according to the nature of the substance which is to be heated or rendered liquid by fusion. It must of course be capable of transferring great heat to bodies, and consist of a suitable fire-place, and receptacles to contain the articles to be operated upon; and sometimes supplied with a dome, so as to reverberate the heat and flame. In the smelting of some ores, several different kinds of furnaces are necessary; in the copper works, for instance, there is the calcining, the melting, the roasting, the refining, and the igniting furnaces.

FUSEE', a small tube, filled with combustible materials, by which fire is communicated to the powder in a bomb; but as its contents burn slowly, time is given before the charge takes fire, for the bomb to reach its destination. *Fusee* was also till lately used for a small neat firelock; but *fusil* is the more modern word.——*Fusee*, the cylinder round which the chain of a clock, watch, or jack, is wound.

FU'SION, the liquefaction of a solid body by means of heat; as in the case of metals, glass, and similar bodies. Those substances which admit of being fused are termed *fusible*, but those which resist the action of fire or heat are termed *refractory*. ——*Watery fusion*, the melting of certain crystals by heat in their own water of crystalization.

FUSILEER', a soldier belonging to what is termed the light infantry: they were formerly armed with a *fusil*; but they are not now so distinguished, their muskets being like the rest.

FUS'TIAN, a kind of coarse thick twilled cotton, which is generally dyed of an olive, leaden, or other dark colour.—— In literature, an inflated style of writing, in which high-sounding and bombastic terms are used, instead of such as are natural, simple, and suited to the subject.

FUS'TIC, the wood of a species of mulberry (*Morus tinctoria*), a large tree growing in most parts of South America, in the United States, and the West India islands. It is very extensively used as an ingredient in the dyeing of yellow; for which purpose large quantities of it are annually imported. There is another kind, called Zante, or *young* fustic, which is a small shrub, of the sumach species. This imparts a beautiful bright yellow dye to cottons, &c., which, when proper mordants are used, is very permanent.

# G.

G, the seventh letter in the English alphabet; but in the Greek, and all the oriental languages, it occupies the third place. It is a mute, and cannot be sounded without the assistance of a vowel. It has a hard and a soft sound, as in *game*, and *gesture;* and in many words, as in *sign, reign*, &c. the sound is not perceived. As a numeral it formerly stood for 400, and with a dash over it, for 400,000. G, in music, is the nominal of the fifth note in the natural diatonic scale of C, and to which Guido applied the monosyllable *sol*. It is also one of the names of the highest cliff.

GA'BIONS, in fortification, baskets made of ozier-twigs, of a cylindrical form, six feet high, and four wide; which, being filled with earth, serve as a shelter from the enemy's fire.

GAB'RONITE, in mineralogy, a yellowish stony substance, distinguished by the large quantity of soda it contains.

GAD, among miners, a small punch of iron, with a long wooden handle, used to break up the ore.

GAD'FLY, an insect of the genus *Œstrus*, which deposits its eggs on the backs of horses and other cattle. It is sometimes called the *breeze*.

GAD'OLINITE, a mineral, usually found in amorphous masses, and having the appearance of vitreous lava. It contains a new earth, called *yttria*.

GA'DUS, in ichthyology, the Cod-fish. There are 23 species of this genus, the most important is the Gadus morhua, or common cod, which inhabits the northern seas of Europe and America, in innumerable shoals.

GAE'LIC, or ERSE, is the name of that dialect in the ancient Celtic language, which is spoken in the Highlands of Scotland. It is a generally received opinion, that the Celtic, at the time of the Roman invasion, was universally spoken over the



THE ROMANS BUILT THEIR IRON FURNACES ON HIGH HILLS, THAT THE FORCE OF THE WIND MIGHT SERVE IN LIEU OF BELLOWS.

SOME YEARS AGO A CHAPEL WAS OPENED IN LONDON FOR THE PERFORMANCE OF DIVINE WORSHIP IN THE GAELIC TONGUE.

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BY THE GALACTOMETER, WE FIND THAT FRESH MILK, RICH IN CREAM, HAS A LESS SPECIFIC GRAVITY THAN THE SAME MILK WHEY SKIMMED.

west of Europe; for, although divided into a variety of dialects, yet they all show the clearest proofs of a common origin. The Gaelic, which, from a variety of causes, has retained much of its original purity, is bold, expressive, and copious. It derives no assistance from the languages either of Greece or Rome, from which it differs in its structure and formation. More than two-thirds of the names of places in Great Britain and Ireland are of Celtic origin, which, if other proofs were wanting, would establish the fact of its once having been the language of the country.

**GAFF**, in nautical language, a sort of boom or pole, used to extend the upper edge of the sails, as in the main-sail of a sloop, &c.

**GAGE**, or **GAUGE**, an instrument for ascertaining measures of different kinds; as, a *sliding-gage*, used by mathematical instrument makers for measuring and setting off distances; a *wind-gage*, an instrument for measuring the force of the wind on any given surface; a *tide-gage*, for determining the heights of tides; and various others.

**GAIL'LIARDE**, an ancient Italian dance, of a sportive character and lively movement. It was sometimes called *Romanesque*, because it was said to have come originally from Rome.

**GAL'ACTIN**, in chemistry, that which constitutes the principal substance in the sap of the cow-tree, or *galactrodendon utile* of South America, where it is used as a substitute for cream. The sap, on standing, throws up a white matter, which, after being well washed, and dried *in vacuo*, over sulphuric acid, constitutes galactin. It is yellow, translucent, brittle, has a resinous appearance, and is tasteless.——The cow-tree of Guiana produces a glutinous, milky fluid, like an animal. It frequently grows upon the sides of a rock, and has dry coriaceous leaves. For several months of the year, its foliage is not moistened by a single shower of rain, and its branches appear entirely dried up; but, upon piercing the trunk, particularly at the rising of the sun, there flows a sweet and nourishing yellow juice, having a balsamic perfume, with many of the qualities of milk. In the morning, the natives of the country in which this vegetable fountain grows, visit it with bowls, in which they carry home its milk for their children: so that this tree, says Humboldt, seems to present the picture of a shepherd, distributing the milk of his flock. Akin to this, is a milk tree called Hya-hya, in Demerara, which is described by Mr. Smith, its European discoverer, to yield a copious stream of thick, rich, milky fluid, destitute of all acrimony, and only leaving a slight clamminess upon the lips. A tree which was felled on the banks of a small stream, had completely whitened the water in an hour or two. Dr. Christison finds the milk to consist of a small portion of caoutchouc, and a large proportion of a substance possessing in some respects peculiar properties, which appear to place it intermediate between caoutchouc and the resins: its nutritive qualities are therefore extremely slight, or at least very questionable.

**GALACTITE**, a fossil substance resembling French chalk in many respects, but when immersed or triturated in water, having the colour of milk.

**GALACTOM'ETER**, or **LACTOM'ETER**, an instrument for ascertaining the quality of milk.

**GAL'AXY**, in astronomy, the *Via Lactea*, or *Milky Way*; a long, white, luminous track, which seems to encompass the heavens like a girdle; forming nearly a great circle of the celestial sphere. This, like every other phenomenon of nature, has supplied the poet with many a fantastic, and many a beautiful dream. The invention of the telescope has confirmed the conjecture of science, that it consists in a multitude of stars, too remote to be separately distinguished by the naked eye. Dr. Herschel says, that in the most crowded part of the Milky Way he has had fields of view that contained no less than 588 stars, and these were continued for many minutes, so that, in a quarter of an hour, he has seen 116,000 stars pass through the field of view of a telescope of only 15′ aperture; and at another time, in forty-one minutes, he saw 258,000 stars pass through the field of his telescope.

**GAL'BANUM**, in medicine, the concrete juice of the *Bubon galbaniferum*, a shrubby plant, belonging to the natural order *Umbelliferæ*, and is usually imported from Syria, Persia, and the East-Indies. This gum-resin comes in large, soft, ductile masses, of a whitish colour, and possessing an acrid, bitter taste, with a disagreeable odour. In its medicinal properties, it is intermediate between ammoniac and asafœtida.

**GALE'NA**, in mineralogy, the sulphuret of lead, found both in masses and crystallized. It occurs in primitive and transition mountains, but is more frequently found in secondary rocks, especially in compact limestone. It constitutes beds and veins; and is found more or less in every country: in England it is very abundant; and it is also widely dispersed over the United States of America. Most of the lead of commerce is obtained from galena, and usually contains a little silver. [See LEAD.]

**GALEN'IC**, in medicine, that manner of proceeding in medicine which is founded upon the principles of Galen, or which that physician introduced. —— *Galenical medicines*, those that are formed by the easier preparations of vegetables; as by infusion, or decoction, or by combining and multiplying ingredients; while the *chemical*, to which they are opposed, are those produced by extracting the more intimate and remote virtues by means of fire and elaborate preparations, as calcination, digestion, fermentation, &c.

**GALL**, in natural history, a protuberance or tumour produced by the puncture of in-

GALES ARE THE MOST POWERFUL OF ALL THE TERRESTRIAL AGITATIONS, AND ARE FREQUENTLY USED WITH GREAT EFFECT IN MEDICINE.



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sects, on plants and trees of various kinds, but more particularly on the oak.——GALL-FLY. There are a multitude of insects which form these excrescences, the principal of which is the *cynips*. Like others of the genus, the female pierces a branch, and deposits an egg in the interior, around which, in the course of a few days, an excrescence is thrown out, affording nourishment to the young insect, and protecting it from external injury until it has attained its full size, when after having undergone metamorphoses, it penetrates the sides of the excrescence, and comes out into the open air.

GALL'-BLADDER, a membrane situated in the concave side of the liver, the use of which is to collect the bile, first secreted in the liver, and mixing it with its own peculiar produce to perfect it farther, to retain it together a certain time, and then expel it.

GALL'-STONES, calculous concretions frequently formed in the gall-bladder, and sometimes occasioning great pain in their passage through the ducts into the *duodenum*, before they are evacuated.

GALLEON', vessels of war formerly used by the Spaniards and Portuguese. In more recent times, those vessels were called *galleons*, in which the Spaniards transported treasure from their American colonies.

GAL'LERY, in architecture, a long, narrow room, the width of which is at least three times less than its length; by which proportion it is distinguished from a *saloon*. Corridors are sometimes also called *galleries*.——*Galleries* are generally decorated with pictures in oil or fresco: hence a large collection of pictures, even if contained in several adjoining rooms, is called a *gallery*.——*Gallery*, in fortification, a covered walk across a ditch in a besieged town, made of strong planks and covered with earth. It was formerly used for carrying a mine to the foot of the ramparts.——*Gallery (of a mine)*, a narrow passage, or branch of a mine carried on underground to a work designed to be blown up.——*Gallery (in a ship)*, a balcony, projecting from the stern of a ship of war, or of a large merchantman.

GAL'LEY, a kind of low, flat-built vessel, furnished with one deck, and navigated with sails and oars, particularly in the Mediterranean.——An open boat used on the Thames by custom-house officers, &c.——The cook-room or kitchen of a ship of war.——The war-galleys, or *naves longæ*, of the Romans, were variously named from their rows or banks of oars.——*Galley slave*, a person condemned to work at the oar on board a galley, being chained to the deck.——In France, the *galleys* resemble the *hulks* of Great Britain, in which the convicts labour and are confined.

GAL'LIC ACID, in chemistry, the peculiar acid extracted from gall-nuts. It is slightly acidulous and styptic to the taste, inodorous, crystalizing in white silky needles, and soluble in boiling water or alcohol. Its principal constituents are carbon and oxygen.—When an infusion of galls is dropped into a solution of sulphate of iron, it produces a deep purple precipitate, which is a very long time in subsiding. It becomes black by exposure to the air; and in writing ink, this precipitate is retained in suspension by mucilage.

GAL'LICAN, any thing belonging to France: thus the term gallican church denotes the church of France, or the assembly of the clergy of that kingdom.

GAL'LICISM, an idiom or phrase of the French language, introduced in speaking or writing another language.

GALLINÆ, in ornithology, the fifth order of birds, under which are comprehended the peacock, pheasant, turkey, partridge, grouse, the domestic cock, &c.

GAL'LIOT, a small galley or Dutch vessel, carrying a main and misen-mast, and a large gaff-main-sail; built very slightly, and designed only for chase. It can both sail and row, and has sixteen or twenty oars. All the seamen on board are soldiers, and each has a musket by him on quitting his oar.

GALLINA'CEOUS, an appellation given to the birds of the order *Gallinæ*.

GAL'LON, a measure of capacity both for dry goods and liquids, containing four quarts.

GALLOON', a narrow thick kind of ferret, or lace, used to edge or border cloths.

GAL'LOP, the swiftest pace of a horse, which is made by springs or leaps; but it may also be a moderate pace, at the pleasure of the rider.

GALLOPA'DE, in the manege, a sidelong or curveting kind of gallop. Also the term for a sprightly and active kind of dance.

GAL'LY, in printing, a wooden or metal frame, into which the compositor empties the lines out of his *composing-stick*, and in which he ties up the page when it is completed.

GAL'VANISM, the development of electrical phenomena without the aid of friction, and in which a chemical action takes place between certain bodies. It derived its name from Galvani, a professor at Bologna, who, in a course of experiments on animal irritability, observed the first striking phenomena which led to its discovery. It occurred in the following manner:—One of his assistants happened to bring the point of his scalpel to the crural nerves of a skinned frog lying near the conductor, upon which the muscles of the limb were agitated with strong convulsions. After this, he continued his experiments in various ways, and ascertained that the mere agency of metallic substances, provided they were dissimilar metals, would produce such convulsions. This subject engaged the attention of experimentalists both before and after the death of M. Galvani, which happened in 1798; but none added any thing materially to his discovery except M. Volta, who repeated the experiments of the former, and found that when two pieces of metal of dif-

PAINTERS AND OTHERS WHO USE OX-GALL SHOULD CLARIFY IT, SO AS TO MAKE IT LIMPID AND TRANSPARENT, LIKE WATER.

THE ROMAN WAR GALLEYS WITH TWO ROWS OF OARS WERE CALLED "BIREMES;" THREE, "TRIREMES;" FOUR, "QUADRIREMES;" AND SO ON.



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ferent kinds were placed in different parts of an animal, and were either brought into contact or into connexion by means of a metallic arc, convulsions ensued every time, and that this effect was strongest when the metals were zinc and silver, particularly when several pairs of metals were employed, having pieces of moist cloth between them. This led him to the idea of constructing a battery, for the purpose of accumulating electricity, which has since been called the galvanic battery, or voltaic pile. Several improvements upon the voltaic pile were soon made by other philosophers; and the discoveries in galvanism multiplied with a rapidity, and to an extent, surpassing any thing before known in the history of science.—Though it is impossible to do more than give a feeble outline of the discoveries in galvanism in our confined limits, we may still be able to allude to the principal of them. We begin by observing, that the simple contact of different conducting bodies is all that is necessary for the excitement of galvanic electricity. 1. The least complicated galvanic arrangement is termed a *simple galvanic circle*. It consists of three conductors; of which one, at least, must be solid, the second fluid, and the third may be either solid or fluid. This is possessed but of feeble powers, yet they are often sufficiently obvious. 2. *Compound galvanic circles*, or *galvanic batteries*, are formed by multiplying those arrangements which compose simple circles. Thus, if slates of zinc and of silver, and pieces of woollen cloth of the same size as the plates, and moistened with water, be piled upon each other in the order of zinc, silver, and cloth, and these, repeated twenty or thirty times, we have the voltaic pile, the power of which is sufficient to give a smart shock; which shock may be renewed at pleasure, until after a few hours, when the activity of the pile begins to abate, and finally ceases altogether. But the galvanic apparatus, by far the most convenient, and generally used, was invented by Mr. Cruickshank. This is called the *galvanic trough*, which has the advantage of being more easily put in action than the pile, and, as it contains more liquid, can be longer continued in action, and is more energetic. For ordinary experiments, a trough containing fifty pairs of plates, four inches square, is sufficient. In those cases where a greater power is wanted, it may be commanded by uniting the power of several such troughs through the union of the zinc end of one trough with the copper end of another, by a metallic slip or wire. The battery of the Royal Institution, with which Sir Humphry Davy made his great discoveries, is composed of 2000 pairs of plates, each plate having thirty-two square inches of surface. But various improvements and modifications of this battery have been invented by Dr. Wollaston, Mr. Children, and others. The size of the plates composing the galvanic series have been varied from one or two inches square to that of a great number of feet. The battery of Mr. Children consisted of twenty pairs of copper and zinc plates, each plate being six feet long by two feet eight inches broad.——*Chemical Effects of Galvanism.* The most simple chemical effect of the galvanic battery is the ignition and fusion of metals; the facility of being ignited, in the different metals, being inversely proportional to their power of conducting heat. Hence platina, which has the lowest conducting power, is most easily ignited; and silver, which conducts heat with greater facility than any other metal, is ignited with more difficulty than any of the rest. The most striking effect of the voltaic battery, however, is the intense light which is produced by placing two pieces of charcoal, cut into the shape of pointed pencils, at the two ends of the wires of an interrupted circuit. When the battery is a very powerful one, and the charcoal points are brought within the thirtieth or fortieth of an inch of each other, a bright spark is produced. By withdrawing the points from each other, a constant discharge takes place, through the heated air, in a space from one to four or more inches, according to the energy of the apparatus, producing a most brilliant arch of light, of considerable breadth, and in the form of a double cone. Platina introduced into this arch melts as wax does in the flame of a candle; and the light equals the brilliancy of the sun. But the most important chemical effect of galvanism is that of producing decomposition. The substance first decomposed by it was water. When two gold or platina wires are connected with the opposite poles of a battery, and their free extremities are plunged into the same cup of water, but without touching each other, hydrogen gas is disengaged at the negative wire, and oxygen at the positive side. By collecting the gases in separate tubes as they are formed, they are found to be quite pure, and in the exact proportion of two measures of hydrogen to one of oxygen. In decomposing water or any other compound, the same constituent principle is always disengaged on the same side of the battery; so that the principles which collect around each pole have a certain analogy; inflammable bodies, alkalies, and earths, go to the negative side, while oxygen and acida go more to the positive side. It is also found, that not only are the elements of a compound fluid separated by galvanic energy, to the opposite wires in distant parts of the containing vessel, without the movement of these elements being perceptible, but that the elements may even be evolved in separate portions of the fluid placed in distinct vessels, and connected only by some slight link, as a few fibres of moist cotton or amianthus. Many phenomena, indeed, still more extraordinary, present themselves in connexion with these interesting experiments. The elements of compound bodies are actually conveyed, by the influence of the electric current, through solutions of substances, on which, under other circumstances, they





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BY THE STATUTE OF 25 GEO. III. CERTIFICATES ARE GRANTED FOR KILLING GAME, AND PENALTIES ENFORCED FOR VIOLATION OF THE ACT.

would have exerted an immediate and powerful chemical action, without any such effect being produced. Acids, for example, may be transmitted from one cup, connected with the negative pole, to another cup on the opposite or positive side, through a portion of fluid in an intermediate cup tinged with any of the vegetable coloured infusions, which are instantly reddened by the presence of an acid, without occasioning the slightest change of colour. The same happens also with alkalies. Not only liquids, but solid substances, are decomposed by means of the galvanic energy, and their elements transferred to the opposite wires. And such is the force of this agent, that the most minute portion of a substance thus acted on by either of the wires is collected around it. From these researches, then, the general law is established, that when compounds are placed in the galvanic circuit, their elements are separated from the state of combination in which they exist, and, according to their peculiar nature, are collected, — some around the positive, others around the negative pole; but whether this is effected by attractions, repulsions, or by both, is not yet satisfactorily ascertained. In conclusion, we may observe, that the subject is continually engaging the attention of the scientific world, and that the theory and practice of galvanism must of necessity become more and more completely understood.—[*See* ELECTRICITY, MAGNETISM, and VOLTAIC ELECTRICITY.]

GALVANOM'ETER, an instrument or apparatus for measuring minute quantities of electricity, or the operations of galvanism.

GAMBO'GE, a gum-resin, being the inspissated juice of the *Garcinia gambogia*, a large tree growing in the East Indies, Ceylon, &c. It is obtained in commerce in masses of a dull orange colour, possessing no smell, and a slightly acrid taste; and affords a beautiful yellow colour, much used by painters. Its medicinal properties are violently cathartic.

GAME, all sorts of birds and beasts that are objects of the chase.——*Game Laws.* In England laws have been enacted to secure to certain privileged classes the right of hunting and shooting wild birds and animals, and preventing their being destroyed, or sold in the market; and it is believed that nothing has been so fertile a source of crime, among the lower orders, as these enactments. The game laws are justified upon the assumption, that beasts of the chase and game are a sort of unappropriated chattels, and so belong to the crown; and, accordingly, that it is no infringement of the right of any subject to grant to other subjects the privilege of killing them. Another reason which has been urged in favour of these laws, is the preservation of game; but this may be as effectually done by prohibiting all persons from destroying game at certain seasons of the year. By a recent enactment, however, for licensing the sale of game, some of the principal objections to the game laws have been obviated.

GAMES, in antiquity, were public diversions, or contests, exhibited on certain occasions, as spectacles for the gratification of the people. Such, among the Greeks, were the Olympic, Pythian, Isthmian, and Nemæan games; and, among the Romans, the Apollinarian, Circensian, Capitoline, &c. The Romans had three sorts of games, viz. sacred, honorary, and ludicrous. The first were instituted in honour of some deity or hero; the second were those exhibited by private persons, to please the people; as the combats of gladiators, the scenic games, and other amphitheatrical sports. The ludicrous games were much of the same nature with the games of exercise and hazard among us: such were the *ludus Trojanus, tesseræ*, &c. By a decree of the Roman senate, it was enacted, that the public games should be consecrated, and united with the worship of the gods as a part thereof; whence it appears, that feasts, sacrifices, and games, made up the greatest part, or rather the whole, of the external worship offered by the Romans to their deities.

GAM'UT, or GAM'MUT, in music, the table or scale of notes laid down by Guido, and marked by the monosyllables ut, re, mi, fa, sol, la; also the first note in the scale.

GANG, in seaman's language, a select number of a ship's crew appointed on any particular service.

GANG'LION, in surgery, a hard movable tumour, in the external or internal part of the carpus, upon the tendons or ligaments in that part, usually unattended with pain.——In anatomy, a small circumscribed tumour, found in certain parts of the nervous system.

GAN'GRENE, in medicine, the first stage of mortification, before the life of the part is completely extinct: when the part is completely dead, it is termed *sphacelus.*

GANGUE, in mining, the earthy, stony, saline, or combustible substance, which contains the ore of metals, or is only mingled with it, without being chemically combined.

GANG'WAY, among seamen, the name of several ways or passages from one part of a ship to another; but it is especially applied to a range of planks laid horizontally along the upper part of a ship's side from the quarter-deck to the forecastle; it is fenced on the outside by iron stanchions, and ropes, rails, or netting.——*To bring up to the gangway*, is to punish a sailor by seizing and there flogging him.

GAN'NET, in ornithology, the Solan Goose, a fowl of the genus *Pelicanus*, with a straight bill, about six inches long, and palmated feet. These fowls frequent the isles of Scotland in summer, where they feed on herrings and other fish. They migrate to the southward in the winter, and appear on the coast of Portugal; but in the breeding season they are found in immense numbers in the Orkneys, and in some

GAMBOGE IS SOMETIMES USED BY CONFECTIONERS TO COLOUR THEIR LIQUEURS, BUT IT IS A PRACTICE MUCH TO BE REPREHENDED.



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parts they form the chief food of the inhabitants.

GANT'LET, or GAUNT'LET, a large kind of glove, made of iron, and the fingers covered with small plates, formerly worn by cavaliers, armed at all points.——*To throw the Gantlet*, is a proverbial phrase, signifying to challenge or defy. The expression derives its origin from the days of chivalry, when he that challenged an opponent in the lists threw down his glove, and he that accepted the challenge took it up.

GANT'LOPE, or GANT'LET, in military affairs, an old punishment in which the criminal, running between the ranks, received a lash from every man. A similar punishment is used on board of ships; but it is seldom inflicted, except for such crimes as are calculated to excite general antipathy among the seamen.

GAR'NET, in mineralogy, a precious stone of great beauty, usually occurring in crystals more or less regular, and having numerous sides. Its predominating forms are rhomboidal, dodecahedron, and the trapezohedron; its prevailing colour is red of various shades, but often brown, and sometimes green, yellow, or black. *Precious Garnet* is always red, and its crystals are found imbedded in various forms. Fine specimens are found in Ceylon, Pegu, Brazil, &c. The term *oriental* sometimes applied to this variety, indicates not a locality, but merely a great degree of perfection. Garnets are usually disseminated, and occur in all the primitive strata from gneiss to clay slate. In some parts of Germany garnets are so abundant as to be used as fluxes to iron ores; in others, the garnet gravel is washed, pounded, and employed as a substitute for emery. The several varieties have the names of the *precious* or *oriental*, the *pyrope*, the *topazolite*, the *melanite*, the *grossular*, the *pyreneite*, and the *colophonite*.

GAOL DELIVERY, a term in law for the clearing of a prison by a judicial condemnation or acquittal of the prisoners; also a commission from the king to deliver or clear the gaols.

GAR'DENING, that branch of cultivation which teaches us how to dispose fruit-trees, flowers, and herbs, to the best advantage, whether for profit or pleasure; and directs us how to prepare the soil for sowing the different kinds of seeds, as well as how to treat the plants, during their various stages of vegetation, till they repay our care by the produce they yield when arrived at maturity. The general disposition of a garden, and of its parts, ought to be accommodated to the different situations of the ground, to humour its inequalities, to proportion the number and sorts of trees and shrubs to each part, and to shut out from the view of the garden no objects that may become ornamental. We read of the "hanging gardens" and embowered grottoes of ancient times, and of Pliny's Tuscan villa, during the luxurious era of Roman greatness: but it is clear, that whatever the art of gardening had produced among them, was, with every other trace of refinement, swept away by the barbarians who devastated Italy. The Troubadours of the middle ages speak of symmetrical gardens; yet, though they may have been very agreeable places, we have no reason to suppose them to have exhibited much of the skill of the scientific gardener. At a later period a new taste in gardening prevailed, which had its origin in France. Regularity was carried to excess; clipped hedges, alleys laid out in straight lines, flower-beds tortured into fantastic shapes, trees cut into the form of pyramids, birds, animals, &c. were the order of the day. The Dutch imitated the French, and the English soon after adopted the unnatural fashion; but to their credit be it remembered, the English were the first who felt the absurdity of this style, and the first to abolish it. But in reforming this petty, cramped, and unnatural character, we fell into the opposite extreme; for every appearance of regularity was rejected as hurtful to the beauty of nature, and it was forgotten, that if in a garden we want nothing but nature, we had better leave gardening altogether. The true style of gardening lies between the two extremes. A gardener ought to study nature, to learn from her the principles and elements of beauty, as the painter is obliged to do; but it is by no means a reproach to a garden, that it shows the traces of art.——In Mr. Repton's work on "Landscape Gardening and Landscape Architecture," lately edited by Mr. Loudon, are the following pertinent observations relative to the improved taste which, during the last century, has been manifested in the residences and domains of the English aristocracy. Having spoken of the quadrangular courts, surrounded by lofty walls, &c. which formerly met the view, and were considered as necessary appendages to the mansions of the great, he says, "It is now acknowledged that gloom is not necessary to magnificence, that liberty is not incompatible with greatness, and that convenience is not the sole object of ornament; for though such things as are useful may occasionally be ornamental, it does not follow that ornaments must always be useful; on the contrary, many of those productions of the polite arts which are most admired, are now merely considered ornaments, without any reference to their original uses. This is confessedly the case with works of painting and sculpture (except in that inferior branch of each which relates to portraits), for whatever might be the original uses of pictures or statues, they are now only considered as ornaments, which, by their number and excellence, distinguish the taste, the wealth, and dignity of their possessors. To use these internal marks of distinction only, might be prudent in those countries where it would be dangerous to display any external ornaments of grandeur; but rank and affluence are not crimes in England; on the contrary, we expect to see a marked



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THOUGH HYDROGEN GAS MAY BE TAKEN INTO THE LUNGS, RESPIRATION CANNOT BE MAINTAINED MORE THAN A MINUTE.

difference in the style, the equipage, and the mansions of wealthy individuals; and this difference must also be extended to the grounds in the neighbourhood of their mansions, since congruity of style and unity of character are amongst the first principles of good taste."

GAR-FISH, or SEA-NEEDLE, in ichthyology, a long, slender fish, with a flat head, projecting forward into a very long, sharp snout. The sides and belly are of a bright silvery colour, the back is green, and the lower jaw projects considerably beyond the upper. It makes its appearance on the English coast just previous to the arrival of the mackerel, whose taste it resembles.

GAR'LIC, a plant of the genus *Allium*, having a bulbous root, consisting of many small tubercles included in its coats. It has a strong smell and an acrid taste, but is much used for food.

GARTER (ORDER OF THE), a military order of knighthood, said to have been first instituted by Richard I. at the siege of Acre, where he caused twenty-six knights, who firmly stood by him, to wear thongs of blue leather about their legs. It is also understood to have been perfected by Edward III., and to have received some alterations, which were afterwards laid aside, from Edward VI.; but the number of knights remained as at first established, till the year 1786, when it was increased to thirty-two. This order is never conferred but upon persons of the highest rank. The habit and ensigns of this order are the garter, mantle, cap, and collar. The badge of the order is the image of Saint George, called the George; and the motto is *Honi soit qui mal y pense*, or "Evil to him that evil thinks hereof." A vulgar story (says Hume) prevails, but is not supported by any ancient authority, that, at a court ball, Edward the Third's mistress, commonly supposed to be the countess of Salisbury, dropped her garter; and the king, taking it up, observed some of the courtiers to smile, as if they thought he had not obtained this favour by accident; upon which he called out *Honi soit qui mal y pense*.

GAS, a general term employed in chemistry to express all permanently elastic aerial fluids, whether produced by chemical experiments, or evolved in natural processes; but it does not include those aerial substances which arise from water, ether, &c., on the application of heat, because they are readily condensed into their respective fluids again, by a certain reduction of temperature, whereas the gases retain their elasticity in every variation of the temperature and pressure of the atmosphere. Every gas, in fact, consists of some ponderable base or substance, which is maintained in its aeriform state by means of heat or caloric; and each has its distinguishing characters constituting its base. Each kind of gas has also its own peculiar and uniform specific gravity, or weight, although they are all several hundred times lighter than water. They possess many extraordinary properties, and play an important part in almost all chemical, and in many natural phenomena; on which account we will briefly describe some of the most remarkable:—1. If a quantity of common *atmospheric air* is enclosed in an inverted glass over mercury, and burning phosphorus is introduced into it, and its introduction repeated till it ceases to burn, it is found, upon measurement, that the portion of air enclosed in the glass is diminished twenty-one parts in the hundred, while seventy-nine remain; and this residue will not support combustion, or maintain animal life, for fire goes out, and animals are suffocated by being placed in it. These twenty-one parts consist of a peculiar kind of air or gas, formerly termed *vital air*, but since named *oxygen*, from its being found to enter into the composition of all acids then known. The remaining seventy-nine parts consist of another peculiar gas, called *azote*, or *nitrogen* gas. Now if a half-extinguished taper is introduced into pure oxygen gas, it blazes up at once; a red-hot wire will burn in it with brilliant scintillations, and burning phosphorus immersed in it throws out a light as dazzling as the sun itself. 2. *Azote*, or *nitrogen gas* has no properties by means of which its action can be subjected to actual inspection; but it is nevertheless important, from the combinations which it forms. Some of these are aqua-fortis, nitrous acid, and the still more remarkable nitrous oxide gas. This peculiarly exhilarating substance is one of the compounds of azote with oxygen, and is one of the most singular substances in nature. 3. *Hydrogen gas* is inflammable, of an offensive odour, and is a constituent part of water. When pure, it is fifteen times lighter than atmospheric air, and is therefore used for filling balloons. It retains its gaseous form when combined with carbon, sulphur, and phosphorus. 4. When carbon is burnt in oxygen gas, the gas does not appear to diminish in quantity, but it presents a set of entirely new properties, and is found to be changed into *carbonic acid gas*. It is so much heavier than common air, that it can be kept in an open jar, and poured from one vessel to another. From this property, it also sinks always to the lowest place to which it has access, and is thus found at the bottom of caves, drains, wells, &c., so often proving fatal to life. It is absorbed in large quantities by water, to which it communicates a grateful pungency; in which form it constitutes the mineral or soda water of the shops. Thus, by a singular coincidence, does the same gas afford a fatal poison, and a luxurious refreshment. 5. *Chlorine*, a disinfecting and bleaching gas, is procured by the decomposition of muriatic acid, or of salts which contain it, and is highly valuable from its contributions to the health, convenience, and luxury of man.—Having thus briefly described the leading properties and effects of different gases, we will here add a few observations on the solidification of carbonic acid gas, by means of an apparatus

THERE ARE MANY ORIFICES IN THE EARTH THROUGH WHICH INFLAMMABLE GAS PASSES, WHICH TAKES FIRE ON ITS CONTACT WITH OXYGEN.



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consisting of a retort and a receiver, constructed by M. Thilorier, of Paris, and lately elucidated by Mr. Faraday, in a lecture before the Royal Institution. It is known, that by subjecting gases to great pressure, their elasticity is so far counteracted, that they become liquid, ethereal, and volatile. The common process is to expose them to the pressure of their own atmospheres. For instance, carbonate of soda and sulphuric acid, mixed together in a perfectly close vessel, generate carbonic acid gas, which soon fills the vessel; and more and more, until by the reaction of the force to escape upon its own particles, by condensation, the gas becomes liquid. M. Thilorier's apparatus is constructed upon this principle, with materials sufficiently strong to resist the pressure of more than ninety atmospheres. Many successful processes have been made to liquefy carbonic acid gas, and in several of them a white powder had been observed; which, however, was allowed to pass away almost unheeded, until Thilorier contrived to collect the snow-like substance, which he tested, and pronounced to be *solid* carbonic acid. The *liquid* carbonic acid is highly volatile, and therefore, by the rapid expansion and evaporation consequent upon its issue from the receiver, is capable of producing an intense degree of cold,—even 189° below the freezing point of water. This frozen substance, cold as it is, may be held in the hand with impunity, or retained in glass in the open air for a considerable time; because it immediately becomes surrounded with its own vapour, and is not in contact with the substance upon which it apparently rests. In order, then, to use it as a cooling agent, two bodies, of widely different temperatures, are to be brought into contact by a third, which must be a good conductor of heat; and for this purpose ether is employed, because it will bear the contact, and still retain its liquid state. Now, although this is not so cold as solid carbonic acid, yet if one's finger were placed into carbonic acid thus dissolved, the effect would be the same as if it were plunged in melted metal. We see, among the scientific notices in the Literary Gazette and Athenæum, that Mr. Addams has exhibited to the British Association two instruments (extensive and ingenious improvements upon Thilorier's apparatus), for the purpose of liquefying and solidifying carbonic acid gas. One consists of brass, and the other of iron, with the power of resisting a pressure on their inward surface of 300 atmospheres, or two tons to the square inch. He also asserted his belief that it may be profitably employed as an agent of motion—a substitute for steam—not directly, as has already been tried by Mr. Brunel, but indirectly, and as a means to circulate and reciprocate other fluids.

GAS'-LIGHT, light produced by the combustion of carburetted hydrogen gas, and applied to the illumination of buildings and streets. It appears that Dr. Clayton, about the year 1735, first gave this a trial, with the view of artificial illumination; though its application to economical purposes was unaccountably neglected for about sixty years. At length, Mr. W. Murdoch, in the employment of Messrs. Watt and Boulton, of the Soho Foundry, instituted a series of judicious experiments on the extrication of gas from the ignited coal; and, in 1798, he erected a gas apparatus on a large scale, at the foundry; thus succeeding in establishing one of the most capital improvements which the arts of life have ever derived from philosophical research and sagacity. In 1803 Mr. Winsor exhibited gas illuminations in the Lyceum, London; and, after presenting to the public a very flattering scheme for instituting a "*national* light and heat company," the sum of 50,000*l.* was raised from a number of subscribers, and the practicability of lighting the streets of cities was proved by his lighting Pall-Mall. Since that time gas has been more extensively employed every succeeding year, till at length almost all factories, and even the smaller towns, are lighted by it. So great, indeed, were the advantages which the public derived from this brilliant light, that in less than twenty years from Mr. Winsor's experiments in Pall-Mall, there were four great gas companies established in the metropolis, having in all 47 gasometers at work, capable of containing 917,940 cubic feet of gas, supplied by 1315 retorts, which generated per annum upwards of 397,000,000 cubic feet of gas, by which 61,203 private lamps, and 7268 public or street lamps were lighted; for which purpose 50,000 tons of coal were annually consumed! Since that period a prodigious increase has taken place. In the first five years, viz. from 1822 to 1827, the abovementioned quantity was nearly doubled; and in the succeeding ten years, it again doubled itself. According to the "general summary" which Dr. Ure has given us, there are, for lighting London and its suburbs with gas—18 public gas works; 12 public gas companies; 2,800,000*l.* capital employed in works, pipes, tanks, gas-holders, and apparatus; 450,000*l.* yearly revenue derived; 180,000 tons of coals used in the year for making gas; 1,460,000,000 cubic feet of gas made in the year; 134,300 private burners supplied to about 40,000 consumers; 30,400 public or street ditto; 380 lamp-lighters employed; 176 gas-holders, several of them double ones, capable of storing 5,500,000 cubic feet; 890 tons of coals used in the retorts on the shortest day in 24 hours; 7,120,000 cubic feet of gas used in the longest night; and about 2500 persons employed in the metropolis alone, in this branch of manufacture.——The following is a slight account of the process by which this beautiful light is generated. The best substances for furnishing a gas rich in luminiferous materials are pitcoal, especially the cannel coal, resin, oil, fats of all kinds, tar, &c. The first operation is the decomposition of the coal by heat, which is effected by subjecting the coal,

THE GAS EVOLVED IN STAGNANT WATERS IS CARBURETTED HYDROGEN, AND ABOUNDS IN DECOMPOSED VEGETABLE SUBSTANCES.

THE SULPHURETTED HYDROGEN CONTAINED IN COAL GAS RENDERS IT VERY INJURIOUS TO SILVER AND PLATED GOODS.



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enclosed in a cast-iron vessel called a retort, to the action of a furnace. Before the retort becomes red-hot, steam issues along with the atmospheric air. When the retort begins to redden, tar distils in considerable quantity, with some combustible gas, of which hydrogen mixed with ammoniacal gas forms a part. When the retort has come to a bright cherry-red heat, the disengagement of gas is most active. By degrees the gaseous production diminishes, and eventually ceases entirely, although the heat be increased. In the retort a quantity of carbonized coal or coke remains, while tar is found at the bottom of the receiver, covered with the ammoniacal liquor, and combined with carbonic and sulphurous acids, and sulphuretted hydrogen. In order to obtain a good light gas from coals, the distillation should commence with a retort previously heated to a cherry-red, which heat should be steadily continued during the whole operation, from five to eight hours; but the operation should be stopped some time before gas ceases to come over, lest gases with feeble illuminating power should impoverish the contents of the gasometer. Coal gas, as it issues from the retort, cannot be directly employed for illumination, in consequence of its containing vapours of tar and coal oil, sulphuretted hydrogen, carbonic oxyde, &c. It is therefore received in a gasometer, that it may experience uniform pressure, and be discharged uniformly into the pipes of distribution, in order to ensure a steady discharge of gas, and uniform intensity of light in the burners. The apparatus for *purifying* the gas is constructed on the most scientific principles, and consists principally of various pipes, coolers containing water, and sieves of wire-cloth, on which layers of dry pulverised quicklime are laid, and through which the gas passes. This purifying process is instituted with a view of separating carbonic acid and sulphuretted hydrogen from the gas, the presence of either of which is highly detrimental to its illuminating power.——*Oil gas* contains no mixture of sulphuretted hydrogen, and requires no other purification than passing through a refrigerator; and as less of it is required for any given quantity of light, the atmosphere of a room is less heated and contaminated by its combustion. It is, however, considerably more expensive than the gas from coal; although the first outlay of capital for a manufactory upon a large scale is less, on account of the smaller size of the necessary pipes and apparatus. The commonest whale oil, or even pilchard-dregs, quite unfit for burning in the usual way, afford abundance of excellent gas. A gallon of whale oil affords about 90 cubical feet of gas, of an average specific gravity of 0.900; and an argand burner, equal to seven candles, consumes a cubical foot and a half per hour. But it is unnecessary to enter into the process of its manufacture; for although its illuminating power is to that of coal gas as 16 to 10, and its formation more simple than that of coal, yet it is much more expensive, and has a far greater tendency to explode when ignited in combination with common air—both of which are serious objections to its use. It was, however, made by the Portable Gas Company, because they were enabled to compress the gaseous matter obtained from oil to about 1-30th of its volume; hence its portability.——*Rosin gas* has also its advantages, which Mr. Brande thus describes:—"The sources of supply are as inexhaustible, and more generally distributed, than those of the coal; and the forests of America, France, Spain, and Italy, yield the turpentine in quantities only limited by the demand. Many large towns in this country, in America, France, Holland, and the Netherlands, have already adopted the use of this gas. The elegance and simplicity of the manufacture, and the comparatively small capital required for the erection of the works, will also give it the preference in the creation of new establishments." For the origin of this improvement we are indebted to Mr. J. F. Daniell, the distinguished meteorologist: his mode of treating the rosin is, to dissolve by gentle heat about 8 lbs. in a gallon of the essential oil, which is plentifully formed during the composition of oil for making gas, or of rosin itself. This solution was allowed to trickle into the heated retort half filled with coke: thus, from 1000 to 1200 cubic feet of gas are obtained from 1 cwt. of rosin, and rather more than the original quantity of volatile oil is condensed, which is again employed for the solution.—With regard to the comparative expense of different modes of illumination, it appears that—one pound of tallow will last 40 hours in six mould candles burned in succession, and costs 8*d.*; a gallon of oil, capable of affording the light of fifteen candles, for 40 hours, costs 5*s.*, or half the price of mould candles; the cost of wax is about 3½ times that of tallow; and coal gas, as sold at 9*s.* per 1000 cubic feet, will be one-sixth the price of mould candles—600 cubic inches of coal gas giving a light equal to the above candle for an hour.

GASOMETER, a hollow cylindrical vessel, usually made of cast metal plates, open at one end, and placed upon its open end in a cistern of water rather larger in dimensions than itself. It serves not merely as a magazine for receiving the gas when it is purified, and keeping it in store for use, but also for communicating to the gas in the act of burning such an uniform pressure as may secure a steady unflickering flame. Its size should be proportional to the quantity of gas to be consumed in a certain time; and it should be strengthened interiorly with cross iron rods.——Before the gas is consumed, it is frequently passed through an instrument called a *meter*, in order to ascertain the number of cubic feet which are used in a given time, or in a particular place. The instrument consists of a sort of evolving drum, index-plates, &c., and is filled with water up to a certain height through an orifice in the side of the





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DIAMONDS, SAPPHIRES, EMERALDS, RUBIES, TOPAZES, HYACINTHS, AND CHRYSOBERYLS, ARE RECKONED THE MOST VALUABLE GEMS.

tween a farthing and a halfpenny in England, which was the price of the first newspaper, and hence the name. The first gazette in England was published at Oxford in 1665. On the removal of the court to London, the title was changed to the *London Gazette*. It is now the official newspaper, and is published on Tuesdays and Fridays.

GAZETTEER', a topographical work, alphabetically arranged, containing a brief description of empires, kingdoms, cities, towns, and rivers. It may either include the whole world, or be limited to a particular country. The first work of this kind, with which we are acquainted, is that of Stephen of Byzantium, who lived in the beginning of the sixth century.

GAZO'NS, in fortification, pieces of fresh earth, covered with grass, and cut in form of a wedge, to line the outsides of works made of earth, as ramparts, parapets, &c.

GEH'LENITE, a recently discovered mineral, by some supposed to be a variety of idocrase.

GEL'ATIN, or GEL'ATINE, a concrete animal substance, or jelly, obtained by boiling with water the soft and solid parts; as the muscles, cartilages, bones, tendons, &c. Of this substance, glue and isinglass are examples. Alcohol and tannin precipitate gelatine from its solution; the former by abstracting the water, the latter by combining with the substance itself into an insoluble compound. Gelatine is capable of assuming an elastic or tremulous consistence when cooled, and liquifying again by the application of heat.

GELATINA'TION, the act or process of converting or being turned into gelatine, or a substance resembling jelly.——The verbs *gelatinate* and *gelatinize*, and the adjective *gelatinous*, are of frequent occurrence in chemical and medical writings.

GELDER-ROSE, in botany, a species of *Viburnum*; also a species of *Spiræa*.

GEM, or GEM'MA, in botany, the bud or compendium of a plant, covered with scales to protect the rudiments from the cold of winter or other injuries. It is also called the hybernacle or winter quarters of a plant.

GELOS'COPY, a kind of divination drawn from laughter; or a method of knowing the qualities and character of a person, acquired from the consideration of his laughter.

GEMS, the name given to *precious stones* in general, but more especially to such as by their colour, brilliancy, polish, purity, and rarity, are sought after as objects of decoration. Gems of the most valuable kinds form the principal part of the crown jewels of sovereign princes, and are esteemed not merely for their beauty, but as comprising the greatest value in the smallest bulk. Gems are remarkable for their hardness and internal lustre. Under this name are comprehended the diamond, ruby, sapphire, hyacinth, beryl, garnet, emerald, topaz, chrysolite, &c. To these have been added rock crystals, the finer flints of pebbles, the cat's eye, the oculus mundi, the chalcedony, the moon-stones, the onyx, the cornelian, the sardonyx, agate, &c. Of most of these species there are some of an inferior class and beauty: these are commonly called by jewellers *occidental stones*. They are mostly the produce of Europe, and found in mines or stone quarries; and are so named in opposition to those of a higher class, which are always accounted *oriental*, and supposed to be only produced in the East.——*Gem-engraving*, or *Gem-sculpture*, called also *lithoglyptics*, is the art of representing designs upon precious stones, either in raised work, as *cameos*, or by figures cut below the surface, as *intaglios*. This art is of great antiquity, and was probably practised by the Babylonians. Some think the art originated in India; but wherever it originated, we have ample evidence that among the Greeks and Romans it was in high esteem. The merit of cameos and intaglios depends on their erudition, as it is termed, or the goodness of the workmanship, and the beauty of their polish. The antique Greek gems are the most highly prized; and, next to them, the Roman ones of the times of the higher empire.——*Artificial Gems*. In order to approximate as near as possible to the brilliancy and refractive power of native gems, a basis, called a *paste*, is made from the finest flint glass, composed of selected materials, combined in different proportions, according to the preference of the manufacturer. This is mixed with metallic oxydes capable of producing the desired colour.——The *imitation of antique gems* consists in a method of taking the impressions and figures of antique gems, with their engravings, in glass, of the colour of the original gems. Great care is necessary in the operation, to take the impression of the gem in a very fine earth, and to press down upon this a piece of proper glass, softened or half-melted at the fire, so that the figures of the impression made in the earth may be nicely and perfectly expressed upon the glass.

GEMAR'A, the second part of the Talmud or commentary on the Jewish laws.

GEMI'NI, in astronomy, the Twins, a constellation or sign of the zodiac, representing Castor and Pollux. In the Britannic catalogue it contains 85 stars.

GEMMATION, in botany, the state, form, or construction of the bud of plants, of the leaves, stipules, and petioles.

GEMO'NIÆ SCA'LÆ, in Roman antiquity, a place for executing criminals, situated on the Aventine mount, or tenth region of the city.

GENDAR'MES, or GENS D'ARMES, in the history of France, an appellation given to a select body of troops, who were destined to watch over the interior public safety, and consequently much employed by the police. They were so called on account of their succeeding the ancient gendarmes, who were completely clothed in armour, and commanded by captain-lieutenants, the king and the princes of the

FINE CRYSTALS OF QUARTZ ARE USED FOR GLASS IN SPECTACLES, ON ACCOUNT OF THEIR HARDNESS, AND ARE THEN CALLED "PEBBLES."



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blood being their captains. At the revolution this body was broken up, and the name was given to a corps which was employed in the protection of the streets. August 16th, 1830, a royal ordinance abolished the *gens d'armes*, and established a new body called the *municipal guard* of Paris, to consist of 1443 men, under the direction of the prefect of police.

GEN'DER, in grammar, a distinction in nouns to mark the sexes; genders are either masculine, for the male sex; feminine, for the female sex; or neuter, for those which are of neither sex. The English language has very few terminations by which the genders are distinguished, such as *count* and *countess*, but generally supplies distinct words; as *boy, girl*; whereas, in the Latin and French, the terminations always mark the distinction, as *bonus equus*, a good horse; *bona equa*, a good mare; *un bon citoyen*, a good citizen; *une bonne citoyenne*, a good female citizen.

GENEAL'OGY, a history of the descent of a person or family from a series of ancestors. In various chapters and military orders, it is required that the candidates produce their genealogy, to show that they are noble by so many descents.——The Jews were anxious to preserve their genealogies entire and uninterrupted; and this care on their part affords an argument of considerable importance with respect to the accomplishment of those prophecies that pertain to the Messiah: accordingly, in their sacred writings, we find genealogies carried on for above 3500 years.

GEN'ERAL, the highest rank in the British army, in which they are successively Major-generals, Lieutenant-generals, and Generals, according to seniority, when promotions are made. The chief commander of an army is often called, by way of distinction, the *general-in-chief*.——A particular beat of drum which in the morning gives notice to the infantry to be in readiness to march, is also called the *general*.

GENERALIS'SIMO, the supreme general or commander in chief of an army.

GEN'ERAL ISSUE, in law, that plea which denies at once the whole declaration or indictment, without offering any special matter by which to evade it. This is the ordinary plea upon which most causes are tried, and is now almost invariably used in all criminal cases. It puts everything in issue, that is, denies everything, and requires the party to prove all that he has stated. In many cases, for the protection of justices, constables, excise officers, &c., they are, by act of parliament, enabled to plead the general issue, and give the special matter for their justification, under the act, in evidence.

GEN'ERALIZE, to extend from particulars or species to genera, or to whole kinds or classes. Ex: Copernicus *generalized* the celestial motions, by merely referring them to the moon's motion. Newton generalized them still more, by referring this last to the motion of a stone through the air.

GEN'ERATING LINE (or FIGURE), in geometry, is that by which its motion produces any other plane or solid figure. Thus, a right line moved any way parallel to itself, generates a parallelogram; round a point in the same plane, with one end fastened in that point, it generates a circle. One entire revolution of a circle, in the same plane, generates the cycloid; and the revolution of a semi-circle round its diameter, generates a sphere, &c.

GENERATION, in physiology, the act of procreating and producing a thing which before was not; or, according to the schoolmen, it is the total change or conversion of one body into a new one, which retains no marks of its former state. Thus, we say, fire is generated, when we perceive it to be where before there was only wood, or other fuel: and a chick is said to be generated, when we perceive it where before there was only an egg.

GEN'ERATOR, in music, the principal sound or sounds by which others are produced. Thus the lowest C for the treble of the pianoforte, besides its octave, will strike an attentive ear with its twelfth above, or G in alt., and with its seventeenth above, or E in alt. Hence C is called their *generator*, the G and E its products or harmonics.

GENERIC, or GENER'ICAL, an epithet pertaining to a genus or kind. It is a word used to signify all species of natural bodies, which agree in certain essential and peculiar characters, and therefore all of the same family or kind; so that the word used as the *generic* name, equally expresses every one of them, and some other words expressive of the peculiar qualities of figures of each are added, in order to denote them singly, and make up what is called the *specific* name. Thus the word *rosa*, or rose, is the generic name of the whole series of flowers of that kind, which are distinguished by the specific names of the red rose, the white rose, the moss rose, &c. Thus also we see, *Canis* is the *generic* name of animals of the dog kind; *Felis*, of the cat kind; *Cervus*, of the deer kind, &c.

GEN'ESIS, a canonical book of the Old Testament, and the first of the Pentateuch, or five books of Moses. The Greeks gave it the name of Genesis, from its beginning with the history of the creation of the world. It includes the history of 2369 years, and besides the history of the creation, contains an account of the original innocence and fall of man; the propagation of mankind; the general defection and corruption of the world; the deluge; the restoration and re-peopling of the earth; and the history of the first patriarchs down to the death of Joseph.

GEN'ET, an animal of the weasel kind, resembling the civet-cat in its musk smell. Also, a small sized, well-proportioned Spanish horse.

GENETH'LIACS, the pretended science of calculating nativities; an astrological mystery.

GENIC'ULATED, in botany, knee-joint-





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ed; an epithet applied to a stem, peduncle, or awn, forming a very obtuse angle at the joints.

GENIOGLOS'SI, in anatomy, a pair of muscles with which the tongue is thrown out.

GENIS'TA, in botany, a genus of plants in the Linnæan system, class 17 *Diadelphia*, order 4 *Decandria*. The species are shrubs.

GEN'ITIVE CASE, the second case in Latin and Greek nouns, which denote possession: it is marked in English by a with an apostrophe, thus ('s).

GE'NIUS, an aptitude for a particular pursuit, founded on some stimulus in youth, by which the mind and faculties are directed to excellence. It combines opposite intellectual qualities; the deepest penetration with the liveliest fancy; the greatest quickness with the most indefatigable diligence. To what is old it gives a new form; or it invents new; and its own productions are altogether original. We estimate it higher than *talent*, in the common acceptation of that term, which in the capacity for originating in extent and energy is inferior to *genius*. Where ordinary powers advance by slow degrees, genius soars on rapid wings. But genius does not assume its distinctive character in every exercise of its powers. A gifted poet, for instance, is not necessarily an ingenious philosopher, nor does the statesman's genius include that of the soldier. We distinguish this genius, therefore, into various kinds, as poetical, musical, mathematical, military, &c.; thus, for example, Milton possessed a genius for poetry, Mozart for music, Newton for mathematics, &c. Yet, although the union of great excellence in different walks of art and science is but rarely found in one man, some, like Michael Angelo, who was equally celebrated as a statuary, architect, and painter, are found possessing genius of a most comprehensive character.——By the ancients the word *genius* was used in an absurd or figurative sense, to express a supposed invisible spirit which directs a course of events. There were both good and bad *genii*. According to the belief of the Romans, every person had his own genius, that is, a spiritual being, which introduced him into life, accompanied him during the course of it, and again conducted him out of it at the close of his career. This belief was no doubt a consequence of their idea of a divine spirit pervading the whole physical world; and was probably a personification of the particular structure or bent of mind which a man receives from nature.

GEN'TILES, a name given by the Jews to all who were not of the twelve tribes of Israel. Among Christians, it is the name of all heathens who did not embrace the Christian faith.

GEN'TLEMAN, in law, any man above the rank of a yeoman. In common speech, every well-bred man: in short, the term is with great propriety applied to men of education, probity, and good breeding, whatever may be their rank or occupation.

GE'NUS, in natural history, a subdivision of any class or order of things, whether of the animal, vegetable, or mineral kingdoms. All the species of a genus agree in certain characteristics.——In botany, a *genus* is a subdivision containing plants of the same class and order, which agree in their parts of fructification.——In medicine, a division of any order of diseases which contains the species.——In music, a distribution of the *tetrachord*, or the four principal sounds, according to their quality.

GEOCEN'TRIC, in astronomy, an epithet designating the place in which a planet appears to us from the earth, supposing the eye to be fixed there, or it is a point in the ecliptic to which a planet seen from the earth is referred.

GENTIA'NA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*, of many species. The common gentian is a native of the mountainous parts of Germany. The root, the only part used, has a yellowish brown colour and a very bitter taste, and is used as an ingredient in stomachic bitters.

GENTOO', a native of India, who follows the religion of the bramins. [See HINDOO.]

GE'ODE, in mineralogy, a roundish lump of agate or other mineral, or a mere incrustation. Its interior is sometimes empty, and the sides of its cavity are lined with crystals; sometimes it contains a solid movable nucleus; and sometimes it is filled with an earthy matter.——*Geodiferous*, producing geodes.

GE'ODESY, that part of geometry which respects the doctrine of measuring surfaces, and finding the contents of all plain figures.——Hence *geodet'ic* and *geodet'ical*, applied to whatever pertains to the art of measuring surfaces.

GE'OGNOSY. This word is nearly synonymous with geology; and is used to denote a knowledge of that part of natural history which treats of the substances composing the crust or covering of the globe.

GEOG'RAPHY, the description of the surface of the earth, its natural divisions, and local characteristics. The fundamental principles of geography are the spherical figure of the earth, its rotation on its axis, its revolution round the sun, and the position of the axis or line round which it revolves, with regard to the celestial luminary; whence it follows that astronomy is the key of all geographical knowledge. In general terms, the earth is termed a perfect sphere, in which case, the diameter from north to south would be precisely equal to the diameter from east to west; but it having been found that the latter exceeds the former by thirty-six miles, the shape of the earth is more truly denominated an oblate spheroid: by which is to be understood a globe, the upper and lower parts of which are flattened. [See EARTH.] *General* geography comprehends the knowledge of the earth in general, and the affections common to the whole globe, as its figure, magnitude, motions, circles, winds, tides, meteors, divi-



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sions into land and water, &c. *Particular* geography has respect to particular countries, showing their boundaries, figure, climate, seasons, inhabitants, arts, customs, language, history, &c. When it respects regions, districts, or parts of countries, it is called *chorography*; and when particular cities, towns, or villages, &c., it is called *topography*. *Ancient* geography treats of the countries and places existing among the ancients; *modern* geography describes the various countries that now exist, and of which we are able to glean information from travellers; *sacred* geography treats of places mentioned in the Bible. There are also two other aspects under which geography may be considered, viz. physical and political geography. *Physical* geography comprises geology, hydrography, meteorology, and a description of the animal, vegetable, and mineral kingdoms. In *political* geography, the earth is considered as the abode of rational beings, according to their diffusion over the globe, and their social relations as they are divided into larger or smaller societies. It does not, however, include that information which is properly and exclusively termed statistical. For, while statistics represents the individual state, as a whole connected in itself, with a perpetual regard to public law, politics, and policy, geography treats exclusively of the local relations of a country.—As a science the ancients knew little indeed of geography; yet we find that they did not overlook or neglect it. It was a constant custom among the Romans, after they had conquered and subdued any province, to have a map of it carried in triumph, and exposed to the view of the spectators. Historians inform us, that the Roman senate, about a hundred years before Christ, sent geographers into various parts to make an accurate survey and mensuration of the globe, but we now know that they scarcely saw the twentieth part of it. Before them, Necho, king of Egypt, ordered the Phœnicians to make a survey of the whole coast of Africa, which they accomplished in three years. Darius procured the Ethiopic sea, and the mouth of the Indus, to be surveyed; and Pliny relates, that Alexander, in his expedition into Asia, took the geographers to measure and describe the roads; and that from their itineraries, the writers of the following ages gleaned the chief of their information. The honour of reducing geography to a system was, however, reserved for Ptolemy, who, by adding mathematical advantages to the historical method in which it had been treated of before, described the world in a much more intelligible manner; delineating it under more certain rules, and fixing the bounds of places from longitude and latitude. As a work of science, therefore, his system deservedly held the first rank among the ancients; and but little was added to what he achieved until the time of Copernicus, A.D. 1520. From that period to the present, the science of geography has been steadily advancing; continual accessions to it having been made—by new discoveries, by accurate accounts of travels by land and water, by systematic topographies and more precise measurements of countries—in short, by that spirit of investigation which has been awakened, and by the increased industry and intelligence of every succeeding age.

GEOL'OGY, the sciences which describes the structure of the earth, and investigates the successive changes which have taken place in the organic and inorganic kingdoms of nature. In order to give as clear an idea of this science as our circumscribed limits will permit, it will in the first place be necessary to notice the principal modern theories upon which a knowledge of geology may be said to be founded.——According to the sacred theory of Burnet, the whole materials of which the earth is composed were united together in one fluid chaotic mass. When these elements began to separate, the heavier particles formed a nucleus, and the water and the air occupied places according to their specific gravity. The air, however, was not, as we now see it, a transparent, attenuated medium, but it was loaded with exhalations and impurities, which it gradually let fall upon the surface of the water, and then floated upon the whole in cloudless serenity. The deposited matter, constituting a rich crust, sent forth its vegetable productions, and soon became clothed with uninterrupted verdure; everything was smooth, soft, and regular, and there was, he says, an universal spring, for the plane of the ecliptic was coincident with that of the equator. In process of time, however, the green and even surface, just described, began to suffer from the continuous action of the sun's rays, which formed cracks and fissures, that ultimately extended to the abyss of waters beneath, and these being sent forth by elastic vapours expanded by heat, soon inundated the superficies; an universal deluge ensued; and in the violent shocks and concussions that attended it, rocks and mountains, and all the inequalites of the present surface, had their origin; then the waters gradually subsided into the residuary cavities, forming the ocean; and partly were absorbed into the crevices of the disjointed strata and nucleus; vegetation began to re-appear, and the once uninterrupted and uniform surface was now broken up into islands and continents, mountains and valleys.—We may here remark, that the labours of modern geologists have exploded this fanciful theory, which, though supported with much erudition and plausibility, is now treated merely as an elaborate fiction.——In an essay towards a natural history of the earth, by Woodward, it is supposed that a new crust was deposited on the earth from the waters of the deluge, and that the materials of which it is composed are arranged according to their specific gravity; the heaviest and hardest bodies forming the nucleus, and being covered by those of a finer and lighter quality.——Buffon's theory was far

THALES, A DISTINGUISHED GRECIAN PHILOSOPHER, IS SAID TO HAVE TAUGHT THAT THE EARTH WAS ORIGINALLY FORMED BY FIRE.

WONDERFUL AS THE DISCOVERIES BY GEOLOGY ARE FOUND, THAT SCIENCE EXTENDS NO DEEPER THAN A MILE—THE MERE CRUST OF THE EARTH.



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more extravagant: he imagined that the planets in general were struck off from the sun by a comet; and that, being composed of fluid matter, they assumed a spherical form, and, by the operation of centrifugal and centripetal forces, were retained in their orbits. As the earth cooled, the surrounding vapours were condensed on its surface, and other matters finding their way into fissures and cavities, formed veins and masses of metallic and earthy minerals. But by the motion of the earth, by the action of the sun, winds, and tides, new changes were produced. The waters were greatly elevated about the equator, and brought with them solid fragments from the polar regions; the surface of the globe now exhibited a broken and irregular aspect; here land arose, there hollows and cavities were formed. Buffon, in fact, believed the earth to have been liquefied by fire; or, in other words, that it was an extinguished sun or vitrified globe, whose surface had been operated upon by a deluge. He assumed, indeed, that the earth was 75,000 years in cooling to its present temperature, and that in 98,000 years more, productive nature must be finally extinguished.——In Werner's theory, which was highly lauded, and which produced conviction in the minds of many, it is assumed that the materials of which the external crust of the earth is composed were either dissolved or suspended in water; and that the first class of rocks were deposited from a state of chemical solution, and thus exhibit a crystalized appearance. In the next series of rocks a few organized remains are observed, and hence it is concluded that marine animals were created about the time when these rocks, which are called *transition* (or *Silurian*) *rocks*, were formed. After this period the waters of the earth, holding in suspension particles of matter in a state of minute division, derived from the disintegration of the first series of rocks, began to subside more rapidly, and to deposit that series of strata which are denominated *secondary rocks*, or floets rocks, because they are deposited in beds in a horizontal position. By the action of the air and the operation of the water, the three classes of rocks being wasted down and broken, produced inequalities on the surface of the earth, and the waters still further subsiding, deposited the different kinds of alluvial matters. In this system a fifth class of rocks, including those substances which are ejected by volcanoes, are called *volcanic rocks*. The formation of *vertical strata* forms a prominent feature in theories of the earth. According to the theory of Werner, as the waters which held in solution or in suspension the materials of which the solid parts of the earth are composed subsided, fissures were formed, and the waters holding in solution other earthy and metallic matters, again covered the earth and deposited these matters in the fissures. ——The *Huttonian* theory is founded on the presumption that the surface of the globe is in a state of constant destruction and renovation. By the action of air and water the hardest rocks are subject to decay and decomposition; and the disintegrated materials are conveyed to the ocean, and there accumulating, are formed into horizontal layers. The strata thus deposited are supposed to be consolidated by the heat of central fires; and to the action of the same subterraneous heat, the production of the primitive rocks, which are supposed to have been projected in a state of fusion from the bowels of the earth, is ascribed. To the operation of the same cause, all kinds of basaltic rocks are also supposed to owe their existence; and the materials of metallic veins, and of the vertical strata, have been ejected in a state of fusion from the centre of the earth, and deposited in fissures either previously formed, or which they form for themselves in their progress through the superincumbent strata. In this theory the operation of both fire and water is introduced; the disintegration and decomposition of the solid parts of the globe are produced by water, and, being deposited at the bottom of the ocean, are consolidated and hardened by heat; and a new series of rocks, projected in a state of fusion by the action of the same power, burst through the secondary strata, and elevating it to great heights, constitute a new series of primitive rocks.——Having thus given an outline of the various popular theories which have chiefly engaged the attention of geologists during the last century, we may now remark, that the two prevailing theories of the present time are, 1st, that which attributes all geological phenomena to such effects of existing causes as we now witness; and 2ndly, that which considers them referable to series of catastrophes, or sudden revolutions. The difference in the two theories is in reality not very great; the question being merely one of intensity of power, so that, probably, by uniting the two, we should approximate nearer the truth. The character of geology has, in fact, undergone a total change within the last half century. Geologists now no longer bewilder their imaginations with wild theories of the formation of the globe from chaos, or its passage through a series of hypothetical transformations, but rather aim at a careful and accurate examination of the records of its former state, which they find indelibly impressed on the great features of its actual surface, and to the evidence of former life and habitation, which organized remains, imbedded and preserved in its strata, indisputably afford. That the earth has at different periods been violently convulsed, and that extraordinary changes have in consequence been effected by such convulsions, there is abundant evidence. Without entering into speculations with regard to great and sudden changes which may have taken place anterior to the Mosaic deluge, the traces of that are very conspicuous. So also are the effects of volcanic action, earthquakes, &c., and the changes which they produce on



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MARINE SHELLS ARE FOUND IN ELEVATIONS FAR ABOVE THE LEVEL OF THE SEA, AND WHERE THE SEA COULD NOT REACH BY ANY EXISTING CAUSE.

the earth's surface form an important consideration in geology. Although we are entirely ignorant of the means employed by nature in producing volcanic fire, we know that by their violence lava is vomited forth, and that substances which were before buried deep in the bowels of the earth, after having their nature changed or modified, have been raised into mountains. Werner distinguishes two kinds of earthquakes. Some, he says, appear to be connected with a particular volcano, and to have their focus in the same region: these are only felt to the distance of a few leagues around, and their paroxysms are almost always connected with those of the volcano. Others, which appear to have their focus at a much greater depth, and whose effects are much greater, are propagated to immense distances with incredible celerity, and are felt almost at the same time at points thousands of miles distant from each other. It is the agitation of the sea that shows the great extent of the tracts of land which are thus convulsed. In this respect, the earthquake at Lisbon, in 1755, was the most remarkable and most violent that we have on record as ever visiting Europe. In consequence of it, by the concussion on the bottom, or momentary rising or upheaving of the sub-marine land, the sea overflowed the coasts of Sweden, England, and Spain, also the coasts of Antigua, Barbadoes, and Martinique in America. At Carlisle bay, in Barbadoes, the tide, which rises only twenty-eight inches, rose twenty feet, and the water appeared as black as ink, owing probably to bituminous matter thrown up from the bed of the ocean. A wave of the sea, sixty feet high, overflowed a part of the city of Cadix; and the lakes of Switzerland were observed to be in commotion six hours after the first shock. In the year 1772, during an eruption of one of the loftiest mountains in Java, the ground began to sink, and a great part of the volcano, and part of the neighbouring country, fifteen miles long and six broad, was swallowed up. Numerous examples might also be given, were it necessary, of the upraising of the land by earthquakes, and to vast inundations which with irresistible force have swept over our present continents, elevating mountains, excavating valleys, breaking the continuity of strata, and carrying the broken parts to countries far distant from their original situation. By the upheaving of the incumbent surface, while one part was rising, another part would sink, and form a new bed, into which the waters of the ocean would gradually retire. Hence, many of the strata which bear evident marks of having been deposited at the bottom of the sea, and of course in a horizontal state, are now found in a position highly inclined to the horizon, and even occasionally vertical. "Everything," says Humboldt, "indicates that the physical changes of which tradition has preserved the remembrance, exhibit but a feeble image of those gigantic catastrophes which have given mountains their present form, changed the position of the rocky strata, and buried sea shells on the summit of the higher Alps. It was undoubtedly in those remote times which preceded the existence of the human race, that the raised crust of the globe produced those domes of trappean porphyry, those hills of isolated basalt in vast elevated plains, those solid nuclei covered with the modern lavas of the Peak of Teneriffe, of Etna, and Cotopaxi." We must now proceed to make some general remarks on the component parts of the earth's crust or covering. This consists chiefly of various kinds of rocks and mountain masses, more or less extensive; and of loose stones, gravel, sand, and loam, all of which are produced by the mechanical division of large masses, by their decomposition or disintegration from the action of air, moisture, &c., or from the continued action of streams of water, torrents, &c. Mountains have been found by geologists to consist, at a considerable depth, of strata regularly disposed, which have been classed under the heads of granite, gneiss, mica slate, clay slate, primitive limestone, primitive trap, serpentine porphyry, sienite topaz, quartz rock, primitive flinty slate, and primitive gypsum. These are altogether denominated *primitive rocks*, which have no organic remains, and appear to have been undisturbed. But in the strata above these there are evident signs of violent fractures caused by the action of waters. In this manner valleys have been excavated, and a separation thus occasioned in strata that once evidently formed one continuous range. Such water-worn fragments have, from the cause of their existence, been denominated *diluvium*, to distinguish them from other debris produced by causes still in operation, such as the *alluvium* or the accession to lands by inundations, torrents, and the like, as also the volcanic rocks formed by the eruptions of mountains. Besides the rocky fragments and insulated hills above mentioned, the strata above these primitive rocks contain also *organic remains*. In those immediately above, called transition rocks, fossil remains of corals and shells are found in small quantities, as also in the carboniferous limestone that lies next to these rocks. The coal strata, which follow, abound with vegetable remains of ferns, flags, reeds of unknown species, and large trunks of succulent plants, which are altogether unknown either in description or in nature. Above the coals are beds containing corals and shells, which, like those in the strata below, are characterized by this peculiarity, that in some places they are to be found in families, and that in other places there will be found beds of marine shells in one layer, and those peculiar to fresh water in another layer, resting one over the other in alternate succession. In the highest of the regular strata, called the crag, will be found the shells at present existing in the same coast, and, lastly, over all these strata is a covering of gravel, which is remarkable for containing the remains of numerous quad-

BEDS OF SEA-SHELLS TWO THOUSAND FEET HIGH ON MOUNT ETNA, AND STRATA OF GREY CLAY, FILLED WITH SHELLS, MUCH HIGHER.



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IN COAL FORMATIONS ARE FOUND BITUMINISED TIMBER, BRANCHES OF SHRUBS, AND LEAVES, WITH SHELLS LYING AMONG THEM.

rupeds, as the bones, horns, teeth, shells, scales, &c. These animals are for the most part either foreign to the climates where their remains are found, or they are of a larger size than any now known, or they are altogether different from any species of animal hitherto known or mentioned. Thus the races of beings which were last destroyed, lie in the upper strata of the earth, while their predecessors are buried far beneath; but each presents characteristics sufficient to mark and identify them. —Among the most interesting and important of the phenomena connected with the stratification and division of rocks, are the breaks which not unfrequently occur in copper, coal, and other mines, where one rock seems to have slipped by the adjoining one, or to have changed its place, so that the metallic or other vein running through them both, is interrupted, and the continuation of it is thrown higher or lower than the first part. The particular situation of minerals, their course and position, which constitute the basis of all mining operations, are of great importance. The courses or veins of minerals sometimes follow straight lines of direction, and at others are bent and curved in various directions. A vein is sometimes compressed or diminishes in thickness; it sometimes stops in the direction of its length; and it is said to be lost, when it splits into several small veins. The vein consists either of one or of several species of minerals; it contains cavities of various form and size, either filled with minerals or having their sides encrusted, or covered by crystals of various kinds, which cavities are called *druses*. Very extensive deposits of minerals, of limited length, are termed *standing beds*, or masses; and mountain masses, intersected by great numbers of small veins and deposits, are called *floors*. Foreign deposits of different kinds occur in mountains, and in rocky districts of all sorts. These all deserve and command the attention of the geologist; but there is nothing of more importance and interest than the presence of petrifactions, and the remains of those races of animals which are now extinct. [See ORGANIC REMAINS.] We will conclude with a parallel betwixt the sciences of geology and astronomy, as drawn by that true philosopher, Sir J. Herschel: "Like astronomy, the progress of geology depends on the continued accumulation of observations carried on for ages. But, unlike astronomy, the observations on which it depends, when the whole extent of the subject to be explored is taken into consideration, can hardly yet be said to be more than commenced. Yet, to make up for this, there is one important difference, that, while in the latter science it is impossible to recal the past or anticipate the future, and observation is in consequence limited to a single fact in a single moment, in the former the records of the past are always present; they may be examined and re-examined as often as we please, and require nothing but diligence and judgment to put us in possession of their whole contents."

**GEOLOGICAL MAPS AND MODELS.** In order to assist the geological student in his inquiries, as well as to facilitate mining operations, there have of late years been published some very valuable maps, representing the different known strata in Great Britain, North America, and various parts of the continent. And at a late meeting of the British Association it was particularly urged by Dr. Buckland and others, that a series of geological works should be perfected and published by the government, as was done by the United States. It appears also, by a method laid down by Mr. Sopwith, that geological models can easily be made, showing not only the position and thickness of the strata in a vertical section, but the actual surfaces and imbedding of the strata lying in different planes, with every undulation and indentation. One of the uses of these models is to point out the partitions of mining property, and prevent trespass; another is, that it makes those who are interested in it acquainted with every particle of coal under the forest; and a third, that it shows them where and how it ought to be worked, and by that means will enable them to prevent a recurrence of that horrible loss of life and destruction of property, which has so frequently taken place.

GEOMANCY, a kind of divination by means of figures or lines, formed by little dots or points, either on the earth or on paper, and representing the four elements, the cardinal points, the planetary bodies, &c. This pretended science was flourishing in the days of Chaucer, and was deeply cultivated by Dryden, at the time of his *vifacciemento* of the Knight's Tale. Cattan, who wrote a book on geomancy in the 16th century, absurdly enough observes, that it is "no art of inchaunting, as some may suppose it to be, or of divination, which is made by diabolicke invocation; but it is a part of natural magicke, called of many worthy men the daughter of astrologie, and the abbreviation thereof."

GEOM'ETRY, that branch of mathematics which treats of the magnitudes and properties of dimensions; or in other words, the science of magnitude in general, comprehending the doctrines and relations of whatever is susceptible of augmentation and diminution: as the mensuration of lines, surfaces, solids, velocity, weight, &c. with their various relations. The origin of this science is always attributed to Egypt, where it is said to have been produced by the necessity of ascertaining the boundaries of landed property, which are every year effaced by the inundations of the Nile. The Greeks, who cultivated geometry more than any other people, doubtless learned the rudiments from the Egyptians; for Thales, who travelled into Egypt and acquired a sufficient knowledge of astronomy to calculate, must also have first become acquainted with the principles of geometry to assist him in his astronomical inquiries. From the time of Euclid, who died three hundred years before the Christian era, to that of Purback and Müller, who died in the

ALL GEOLOGISTS AGREE THAT THE BONES OF SPECIES NOW KNOWN ARE NEVER FOUND BUT IN LIGHT, UPPER, ALLUVIAL DEPOSITS.



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PLATO VALUED GEOMETRY SO HIGHLY, THAT HE INSCRIBED OVER THE DOOR OF HIS ACADEMY, "LET NO ONE IGNORANT OF GEOMETRY ENTER HERE."

ABOUT FIFTY YEARS AFTER PLATO, EUCLID COLLECTED THE THEOREMS OF HIS PREDECESSORS, AND ENTITLED THEM THE "ELEMENTS OF GEOMETRY."

fifteenth century, geometry was neglected. Since its revival, it has benefited by the illustrious labours of Neper, Descartes, Newton, and Leibnitz; and it is universally allowed to be of the utmost value as a branch of general knowledge, since it induces precision of thinking, by admitting nothing but evident and indubitable demonstration. The science of geometry is distinguished into the theoretical and the practical. Theoretical or speculative geometry treats of the various properties and relations in magnitudes, &c. Practical geometry comprehends the construction of figures, the drawing of lines in certain positions, as parallel or perpendicular to each other, &c. Speculative geometry is again distinguished into elementary geometry, that treats of the properties and proportions of right lines and right-lined figures, as also of the circle and its several parts: and the sublime or transcendental geometry, that treats of the higher order of curves, &c. The elementary principles of geometry are explained in definitions and axioms. The following are the most important definitions. A *point* is that which has neither length, breadth, nor thickness. A *line* has length without breadth or thickness. A *superficies*, or *surface*, has length and breadth only, the boundaries of which are lines. A *solid* is a figure which has length, breadth, and thickness. A *curve* continually changes its direction between its extreme points. A *straight* line lies evenly between the parts. *Parallel* lines keep at the same distance from each other when extended indefinitely. A *perpendicular* line is perpendicular to another line. An *angle* is formed by the meeting of two lines in a point; it is a *right angle* when formed by one line falling perpendicularly on another line; an *obtuse angle*, when it is greater than a right angle; and an *acute angle* when it is less. A figure of three sides and angles is called a *triangle*. An *equilateral* triangle is that whose three sides are equal. An *isosceles* triangle is that which has two sides equal. A *scalene* triangle is that whose three sides are all unequal. A figure of four sides and angles is called a *quadrangle*, or *quadrilateral*. A *parallelogram* is a quadrilateral which has both its pairs of opposite sides parallel; and a *rectangle* is a parallelogram, having a right angle. Four-sided figures are moreover distinguished according to their sides and angles, into a *square*, which has all its sides equal and its angles right ones; an *oblong* square, which has its opposite sides equal and its angles right ones; a *rhombus*, having all the sides equal, but the angles not right ones; and a *rhomboid*, having the opposite sides equal and the angles not right ones. When a quadrilateral has none of its sides parallel, it is a *trapezium*, and when only two of its sides parallel, a *trapezoid*. The *diagonal* is the right line which divides a parallelogram into two equal parts. The *base* of a figure is the side on which it is supposed to stand. The *vertex* is the extreme point opposite to the base; the *altitude* is the perpendicular distance from the vertex to the base. A *circle* is a plane figure bounded by a curve line, called the *circumference*, which is every where equidistant from a certain point within, called its *centre*; the *radius* of a circle is a line drawn from the centre to the circumference; the *diameter* of a circle is a line drawn through the centre, and terminating at the circumference on both sides; an *arc* of a circle is any part of the circumference; a *chord* is a right line joining the extremities of an arc; a *segment* of a circle is any part of a circle bounded by an arc and its chord; a *semicircle* is half the circle or a segment cut off by a diameter; a *sector* is any part of a circle which is bounded by an arc, and two radii drawn to its extremities; and a *quadrant*, or quarter of a circle, is a sector having a quarter of the circumference for its arc. The circumference of every circle is supposed to be divided into 360 equal parts, called *degrees*; each degree into 60 *minutes*; and each minute into 60 *seconds*: hence a semicircle contains 180 degrees, and a quadrant 90 degrees. A *pyramid* is a solid figure contained by planes that are constituted betwixt one plane and one point above it in which they meet. A *prism* is a solid figure contained by plane figures of which two that are opposite are equal, similar, and parallel to one another; and the others parallelograms. A *sphere* is a solid figure described by the revolution of a circle. A *cone* is a solid figure described by the revolution of a right-angled triangle about one of the sides containing the right angle. A *cylinder* is a solid figure described by the revolution of a right-angled parallelogram about one of its sides. And a *cube* is a solid figure contained by six equal squares. An *axiom* is a manifest truth not requiring a demonstration: The following are examples of axioms, "Things equal to the same thing are equal to one another:" "The whole is greater than any of its parts, and equal to all its parts." "If equal things be taken from equal things, the remainders will be equal." "Magnitudes which coincide with one another, or which exactly fill the same space, are equal to one another." A *proposition* is something proposed either to be done or to be demonstrated, and is either a problem or a theorem: it is a *problem* when it proposes anything to be done, as to divide a given line into two equal parts, or to raise a perpendicular, &c.; and a *theorem* when it proposes something to be shown, as, that triangles of the same base and altitude are equal to each other, or that all the angles in the same segment of an arc are equal, &c. When something is premised, or demonstrated, in order to render what follows more easy, it is termed a *lemma*. A *corollary* is a consequent truth, gained immediately from some preceding truth or observation. A *scholium* is a remark or observation made upon something going before it.——*Transcendental Geometry*, is the geometry of figures, the relation of whose ordinate and absciasa cannot be expressed algebraically.——*Geometrical Progression* is

when the terms increase or decrease by equal ratios; as 2, 4, 8, 16, 32; or 32, 16, 8, 4, 2.

GEOPON'ICS, the art or science of cultivating the earth.

GEO'RAMA, a hollow sphere, 36 feet in diameter, representing the surface of the earth, its mountains, seas, rivers, &c. with great accuracy. It is a Parisian invention.

GEORGE (St.), a saint or hero whose name is famous throughout all the East, and by which several orders, both military and religious, have been distinguished. St. George is usually represented on horseback, in full armour, with a formidable dragon writhing at his feet. His sanctity is established in the Latin as well as the Greek church; and England and Portugal have chosen him for their patron saint. According to ancient legends, this renowned saint was a prince of Cappadocia; whose greatest achievement was the conquest of an enormous dragon, by which he effected the deliverance of Aja, the daughter of a king. The legend belongs to the age of the crusades. The ancient Christian emperors bore the knight upon their standards. To these sacred banners the crusaders attributed a miraculous power, and were sure of conquest while they floated above their heads. Many, however, deny his very existence; and reduce his effigy to a mere symbol of victory gained by the crusaders over the Mussulman nation.

GEOR'GICS, a poetical composition treating of husbandry, after the manner of Virgil's poems on rural subjects, which are called Georgics.

GEOR'GIUM SI'DUS, or URA'NUS, the name given by Dr. Herschel, in honour of George III., to the planet which he discovered in 1781.

GERA'NIUM, a genus of plants, class 16 *Monadelphia*, order 5 *Decandria*. Of this there are numerous species, which are remarkable for the beauty either of their leaves or their flowers, or both. The seeds of the flower are contained in a husk, which resembles a stork's beak, whence it has acquired the English name of crane's bill.

GER'MAN, a native of Germany. Also, the German language.——*Cousins-german*, the sons or daughters of brothers or sisters; first cousins.

GERMAN'DER, in botany, the name of several plants, as the *rock germander*, of the genus Veronica, and the *common* and *water germander*, of the genus Teucrium.

GER'MEN, in botany, the germ, ovary, or seed bud, which is the lower part or base of the pistil, and in the progress of vegetation becomes the seed-vessel.

GERMINA'TION, in botany, the act of sprouting forth, as applied to the seeds of vegetables; also the time when they vegetate.

GEROCO'MIA, that part of medicine which prescribes a regimen for old age.

GER'RA, in antiquity, a sort of square shield, used first by the Persians, and afterwards by the Greeks.

GER'UND, in grammar, a verbal noun of the neuter gender, partaking of the nature of a participle, declinable only in the singular number, through all the cases except the vocative; as, nom. *amandum*, gen. *amandi*, dat. *amando*, accus. *amandum*, abl. *amando*.

GESNE'RIA, in botany, a genus of plants, class 14 *Didynamia*, order 2 *Angiospermia*. The species are shrubs.

GESTURE, any action or posture intended to express an idea or passion, or to enforce an argument or opinion: hence propriety of gesture is of the first importance to an orator.

GHOST, the soul or spirit separate from the body. The ancients supposed every man to be possessed of three different ghosts, which, after the dissolution of the human body, were differently disposed of. These they distinguished by the names of *Manes, Spiritus, Umbra*. The *Manes*, they fancied, went down into the infernal regions; the *Spiritus* ascended to the skies, and the *Umbra* hovered about the tomb, as being unwilling to quit its old connexions.——*To give up the ghost*, a phrase used in Scripture for—to yield up the breath, or expire.

GHOST, HOLY; the third person in the Holy Trinity; but according to the Socinians, a biblical metaphor, to designate the divine influence. All Christians who subscribe to the doctrine of the Athanasian creed, believe the Holy Ghost to have proceeded from the Father and the Son; yet the Son and Holy Ghost are both eternal, since they are co-eternal with the Father. The Greek church maintains that the Holy Ghost proceeds from the Father only; and this difference is one of the main points of distinction between that church and the Roman Catholic.——A military order in France under the old *regime*, which was abolished by the revolution, but revived by the Bourbons.

GI'ANT'S CAU'SEWAY, a vast assemblage of basaltic crystalized rocks, on the northern coast of Ireland, so extensive and regular as to excite the admiration of every beholder. This magnificent production of nature extends two miles in length along the coast of Antrim, and probably runs under the sea as far as the coast of Scotland, since something of the same kind is met with there, and known by the name of Fingal's Cave. It consists of many hundred thousands of columns of a black kind of rock, hard as marble, of about twenty feet in height, and a pentagonal or five-sided figure. Each column stands by itself, not joining another in any part whatever; and yet so compactly are the whole arranged that scarcely a knife can be introduced between them. What still farther fills the spectator with an amazement that increases by length of examination, is the circumstance that though almost every pillar is pentagonal in its form, and therefore presents an apparently general likeness, no two in twenty thousand have their angles and sides equal among themselves,





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or to each other. The columns are not each of one solid stone, in an upright position, but composed of several short lengths, exactly joined, not with flat surfaces, but articulated into each other, as a ball in a socket, one end of the joint having a cavity of three or four inches deep, into which the convex end of the opposite joint is exactly fitted.

GI'ANTS. History, both sacred and profane, makes mention of giants, or people of extraordinary stature. Nations, as well as individuals, in their infancy, love the miraculous; and any event which deviates from the common course of things, immediately becomes a wonder on which poetry eagerly seizes; hence the Cyclops and Læstrygons of the ancients, and the ogres of romance. Instances, however, are by no means wanting of uncommonly large persons, hardly needing the exaggeration of a lively imagination to make them objects of wonder. The giants spoken of in Scripture might be men of extraordinary stature; but not so much above the ordinary measure as they have fancied, who describe them as three or four times larger than men are at present. And when we find the Israelites describing themselves as appearing like grasshoppers before the Anakites, we must bear in mind the universal practice among the nations of the East to express their astonishment in the most extravagant style of hyperbole. The giants of Greek mythology are believed by some to represent the struggle of the elements of nature against the gods, that is, against the order of creation. They were said to hurl mountains and forests against Olympus, disdaining the lightnings of Jupiter, &c. Giants, indeed, make a very considerable figure in the fabulous history of every nation; but, like ghosts and fairies, they have always vanished at the approach of science and civilization. The fossil bones which gave currency to the belief of their existence, have upon minute inquiry been found generally to belong to elephants, whales, &c.

GIAOUR, a word literally signifying *dog* in the Turkish language; and commonly applied by the Turks to designate the adherents of all religions except the Mohammedan, but more particularly Christians.

GIB'BOUS, in astronomy, a term applied to the enlightened part of the moon, during her course from full to new, when the dark part appears falcated or horned, and the light part convex or gibbous.

GIB'ELINES, or GHIB'ELINES, a faction in Italy, in the 13th century, who were the opponents of another faction called the *Guelfs* [which see.]

GIE'SECKITE, a mineral of a rhomboidal form and compact texture, of a gray or brown colour, and nearly as hard as calcareous spar.

GIL'BERTINE, one of a religious order, so named from Gilbert, lord of Sempringham in Lincolnshire.

GIL'DA MERCATO'RIA, in law, mercantile meetings, assemblies, or corporate bodies.

GILL, the organ of respiration in fishes, consisting of a cartilaginous or bony arch, attached to the bones of the head, and furnished on the exterior convex side with a multitude of vascular fibrils of a red colour. The water is admitted by the gill-opening, and acts upon the blood as it circulates in the fibrils.—*Gill-flap*, a membrane attached to the posterior edge of the lid of the gill, immediately closing the gill-opening.

GILL, (*pron. jill*), a measure of capacity, containing the fourth part of a pint.—Among miners, a measure equal to a pint.

GIL'LYFLOWER, in botany, the name of certain plants. The *clove gillyflower* is of the genus Dianthus, or carnation pink; the *stock gillyflower*, is the Cheiranthus; and the *queen's gillyflower*, the Hesperis.

GILT'HEAD, in ichthyology, a genus of fishes, the *Sparus*, of many species; so named from their colour, or from a golden spot between their eyes.

GIM'BAL, a brass ring by which a sea compass is suspended in its box, by means of which the card is kept in a horizontal position, notwithstanding the rolling of the ship.

GILD'ING, the art of covering anything with gold, either in a foliated or liquid state. The beauty of gold has induced many attempts to imitate its appearance, and hence several methods of gilding have been invented. The art of gilding, at the present day, is performed either upon metals, or upon wood, leather, parchment, or paper; and there are three distinct methods in general practice; namely, *wash*, or *water gilding*, in which the gold is spread, whilst reduced to a fluid state, by solution in mercury; *leaf gilding*, either burnished or in oil, performed by cementing thin leaves of gold upon the work, either by size or by oil; and *japanner's gilding*, in which gold dust or powder is used instead of leaves. When gold is to be applied to a body that is of metal, the surface is previously covered with some gluey substance or size: and when the body is to be exposed to the injuries of the weather, a composition of drying oil and yellow ochre is used in place of the water-size. In the process of gilding metals, the surface is first cleansed, and then the leaves applied, which, by means of burnishing, and a certain degree of heat, are made to adhere in the manner desired. Gold is also sometimes fixed on metals, by previously reducing it into an amalgam or paste, with mercury. With this amalgam, the metal to be gilded is covered; and, on the application of heat sufficient to evaporate the mercury, nothing is left but the gold, which is afterwards burnished. It is also performed by diluting a solution of gold in nitro-muriatic acid, with alcohol, and applying it to the clean surface of the metal. Gold is also applied to glass, porcelain, and other vitrified substances, of which the surfaces, being very smooth, are capable of perfect contact with the gold leaves. This gilding is so much the more excellent as the gold is more exactly applied, which done, the articles are exposed to a certain degree of heat, and





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afterward slightly burnished; or a more substantial gilding is fixed upon glass by the use of powder of gold mixed with a solution of gum-arabic, or with some essential oil and a small quantity of borax.

GIN, or GENEVA, a hot fiery spirit formerly drawn from oats, barley, or malt, redistilled with the addition of berries of the *genievre* or juniper tree, but now made principally of the oil of turpentine and malt spirits. The Hollands gin is manufactured chiefly at the village of Schiedam, and is drawn from wheat or rye and juniper berries. The English gin is a destructive drink, much resorted to by the lower orders; and their palates are so vitiated by its use, as to render purer spirits in a manner insipid to them.

GIN'GER, in botany, *amomum zingiber*, is an East Indian plant, which is also cultivated to a considerable extent in Jamaica and other West India islands. The root is of the size of a finger, knotty, irregular, and creeping. It possesses an aromatic, pungent flavour; makes an excellent preserve, and is used medicinally as a carminative.

GIN'GLYMUS, in anatomy, a species of articulation resembling a hinge. That species of articulation in which a bone partly receives and is partly received by the other, so as to admit only of flexion and extension, is called *angular ginglymus*.

GIN'SENG, a plant of the genus *Panax*, found in the northern parts of Asia and America. It has a jointed, fleshy, taper root, about the size of one's finger, which when dry is of a yellowish white colour, with a mucilaginous sweetness in the taste, accompanied with a slight bitterness. The Chinese value the ginseng highly, and, as well as the Asiatics in general, think it almost an universal medicine. They have recourse to it in all diseases, and, in short, have no confidence in any medicine unless in combination with it; but the virtues most generally ascribed to ginseng, are those of a restorative, a provocative, and a cordial.

GIRAFFE, the CAMELOPARD, [which see.] In addition to the description which we have before given of this animal, we here extract a few lines relative to the speed and habits of the giraffe, from a very interesting account communicated to the Secretary of the London Zoological Society (January, 1836) by M. Thibaut, who, in company with the Arabs, had captured several of these animals. "The first run of the giraffe is exceedingly rapid. The swiftest horse, if unaccustomed to the desert, could not come up with it unless with extreme difficulty. If the giraffe reaches a mountain, it passes the heights with rapidity: its feet, which are like those of a goat, endow it with the dexterity of that animal; it bounds over ravines with incredible power; and horses cannot, in such situations, compete with it. The giraffe is fond of a wooded country; the leaves of trees are its principal food, which it takes leaf by leaf, collecting them from the trees by means of its long tongue. It rejects the thorns, and in this respect differs from the camel. It is extremely fond of society, and is very sensible. I have observed one of them shed tears when it no longer saw its companions or the persons who were in the habit of attending to it."

GIP'SIES, or GYP'SIES, a wandering tribe, or race of vagabonds, spread over the greater part of Europe, and some parts of Asia and Africa; strolling about and subsisting mostly by theft, low games, and fortune-telling. The name is supposed to be corrupted from *Egyptian*, as they were formerly thought to have come from Egypt; but it is now believed they are of Indian origin, and that they belonged to the race of the Sindes, an Indian caste, which was dispersed, in 1400, by the expeditions of Timour. Their language is the same throughout Europe with but little variation, and even now resembles the dialect of Hindostan. In short, the late Bishop Heber relates, in his Narrative of a Journey through the Upper Provinces of India, that he met with a camp of gypsies on the banks of the Ganges, who spoke the Hindoo language as their mother tongue; and he further observes, that he found the same people in Persia and Russia. Gypsies are remarkable for the yellow brown, or rather olive colour of their skin; the jet black of their hair and eyes; the extreme whiteness of their teeth; and for the symmetry of their limbs, which distinguishes even the men, whose general appearance, however, is repulsive and shy. Though some occasionally follow a trade or honest calling, they rarely settle permanently anywhere. Wherever the climate is mild enough, they are found in forests and deserts, in companies. They seldom have tents, but seek shelter from the cold of winter in grottoes and caves, or they build huts, sunk some feet in the earth, and covered with sods laid on poles. They are fond of instrumental music, which they chiefly practise by the ear, and their lively motions are remarkable in their own peculiar dances. The youthful gypsies traverse the country, the men obtaining their living by gymnastic feats, tricks, &c., while the women invariably practise fortune-telling and chiromancy. They are not nice in their food, but eat all kinds of flesh; even that of animals which have died a natural death. Brandy is their favourite beverage; tobacco their greatest luxury; both men and women chew and smoke it with avidity, and are ready to make great sacrifices for the sake of satisfying this inclination. As for religion they have no settled notions or principles: amongst the Turks they are Mohammedans; in Christian countries, if they make any religious profession at all, they follow the forms of Christianity, without, however, caring for instruction, or having any interest in the spirit of religion. They marry with none but their own race, but their marriages are formed in the rudest manner, and when a gypsy becomes tired of his wife, he will turn her off without ceremony.



AN GINGER-BEER REMAINS ITS CARBONIC ACID IN THE GLASS FOR A CONSIDERABLE TIME, IT IS THE MOST REFRESHING BEVERAGE IN HOT WEATHER.

GYPSIES WERE EXPELLED FRANCE IN 1560, AND IN 1580 AN ACT OF PARLIAMENT WAS PASSED AGAINST THEIR ITINERANCY IN ENGLAND.

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THE HIMALAYAN MOUNTAINS, EXTENDING FROM THE SOURCES OF THE GANGES TO THOSE OF THE BRAMAPOOTRA, ARE ALWAYS CAPPED WITH SNOW.

GIR'ASOL, a mineral of a white or bluish white colour, but which when turned towards the sun or any bright light reflects a reddish tint; hence its name.

GIRD'ER, in architecture, the principal piece of timber in a floor. Its end is usually fastened into the breastsummers, and the joists are framed into it at one end.

GIR'ONDISTS, a republican party in France, of a character less exceptionable than many who figured in the dreadful scenes of the revolution. They obtained their appellation from several of their most distinguished members having come from the department of the Gironde; and they were chiefly celebrated by their fatal opposition to the mountain party in the convention, who eventually brought most of them to the guillotine or proscribed them.

GIR'OUETTE (*French*, weathercock), a term applied to numerous public characters in France, who, during the revolutionary era, turned with every political breeze. To mark these, a *Dictionnaire des Girouettes* was published, containing their names, &c., with a number of weathercocks against each, corresponding to the number of changes in the individual's political creed. [In our "Biographical Treasury" we have given the lives of the most important of these—not indeed for their merits, but for the influence they severally possessed, and their wanton exercise of power during that unparalleled period in the history of nations.]

GIR'ROCK, in ichthyology, the *Lacertus*, a species of gar-fish.

GIV'EN, a term much used by mathematicians, to denote something supposed to be known. Thus, if a magnitude be known, it is said to be a *given* magnitude, if the ratio between two quantities be known, these quantities are said to have a *given* ratio, &c. &c.

GLA'CIERS, immense masses or fields of ice which accumulate in the valleys between high mountains, from the melting of the snow at their top, and which, owing to their elevation, generally remain solid. The ice of the glaciers is entirely different from that of the sea and river water. It is not formed in layers, but consists of little grains of congealed snow; and hence, though perfectly clear, and often smooth on the surface, it is not transparent. As glaciers, in some positions, and in hot summers, decrease, they often also increase for a number of years so as to render a valley uninhabitable. Their increase is caused partly by alternate thawing and freezing; their decrease, by the mountain rivers, which often flow under them, and thus form an arch of ice over the torrent. In the Tyrol, Switzerland, Piedmont, and Savoy, the glaciers are so numerous that they have been calculated to form altogether a superficial extent of 1484 square miles.

GLA'CIS, in fortification, a mass of earth serving as a parapet to the covered way, having an easy slope or declivity towards the champaign or field.

GLA'DIATE, in botany, an epithet for the legume of a plant resembling a sword in shape.

GLA'DIATORS, in antiquity, combatants who fought at the public games in Rome, for the entertainment of the spectators. They were at first prisoners, slaves, or condemned criminals; but afterwards freemen fought in the arena, either for hire, or from choice. The games were commenced by a *prælusio*, in which they fought with weapons of wood, till, upon a signal, they assumed their arms, and began in earnest to fight in pairs. In case the vanquished was not killed in the combat, his fate was decided by the people. If they wished to save the life of the vanquished gladiator, they signified the same by clenching the fingers of both hands between each other, and holding the thumbs upright, close together; the contrary was signified by bending back their thumbs. The first of these signals was called *pollicem premere*, the second *pollicem vertere*. The victors were honoured with a palm branch, a sum of money, or other marks of the people's favour; and they were not unfrequently released from further service, and received as a badge of freedom, the *rudis*, or wooden sword.

GLAD'IOLE, in botany, the Sword-lily, a plant of the genus *Butomus* or Flowering-rush, and also of the genus *Lobelia* or Cardinal-flower.

GLA'DIUS, *(Latin*, a sword): whence *jus gladii*, or right of the sword, is used in our ancient Latin authors, and in our Norman laws, for supreme jurisdiction; and it is probably from hence that, at the creation of an earl, he is *gladio succinctus*, to denote his having a jurisdiction over the county.

GLAD'WIN, in botany, a plant of the genus *Iris*.

GLAIR, the white of an egg; or any viscous transparent substance resembling it.

GLAND, in anatomy, a small hollow follicle, formed by the convolution of a great number of vessels, and covered with a membrane, usually provided with an excretory duct, and destined to separate some particular fluid from the mass of blood, or to perfect the lymph. Glands have been divided into *simple*, *compound*, *conglobate*, and *conglomerate*, from their structure; but a more proper division is into *lymphatic* and *secretory*. Some glands are hard and firm, and others extremely soft and tender: of the latter kind in particular are the glands situated in the articulations of the bones of the several parts of the body. They differ also very considerably in their colour, figure, and uses: some of them are salival, mucous, and lymphatic; others are mucilaginous, sebaceous, and waxy; others lachrymal, pituitary, &c. The excretory duct of a gland is that through which the fluid of the gland is excreted. The vessels and nerves of glands always come from the neighbouring parts, and the arteries appear to possess a high degree of irritability.

GLAN'DERS, a virulent disease in horses, which shows itself by a discharge of mucus from the nostrils.

SEVERAL ANIMALS HAVE GLANDS AND BAGS SECRETING OFFENSIVE SUBSTANCES, AND CAN EMIT FETID MATTER WHEN PURSUED.



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THE ART OF MAKING GLASS AND PORCELAIN, BY COMBINING ALKALIES, SAND, AND FLINT TOGETHER, IS ALTOGETHER A CHEMICAL PROCESS.

ALL WHITE TRANSPARENT STONES, WHICH WILL NOT BURN TO LIME, ARE FIT TO MAKE GLASS; AND FOR THEM SAND IS SUBSTITUTED.

**GLANDIFEROUS**, in botany, an epithet applied to trees which bear acorns or other nuts, as the beech and oak.

**GLASS**, a hard, brittle, transparent, factitious substance, formed by the fusion of siliceous and alkaline matter. Pliny ascribes its origin to accident. Certain merchants, as he relates, were driven into the mouth of the Belus, a river in Syria, by stress of weather; and being obliged to continue there, and dress their victuals near the shore, where they used kali for fuel, the ashes of the herb mixed with the sand or stones, and produced glass: a phenomenon which, being known, induced the people of Sidon to pursue the hint it afforded, and, eventually, to establish the manufacture in question among the number of human arts. Whether or not this account is to be relied on we have not the means of judging; but we can readily agree with Dr. Johnson, who says, "By some fortuitous liquefaction was mankind taught to produce a body at once in a high degree solid and transparent, which might admit the light of the sun, and exclude the violence of the wind; which might extend the sight of the philosopher to new ranges of existence, and charm him at one time with the unbounded extent of the material creation, and at another with the endless subordination of animal life; and, what is yet of more importance, might supply the decays of nature, and succour old age with subsidiary sight. Thus was the first artificer in glass employed, though without his own knowledge or expectation. He was facilitating and prolonging the enjoyment of light, enlarging the avenues of science, and conferring the highest and most lasting pleasures; he was enabling the student to contemplate nature, and the beauty to behold herself." Silica, formerly styled the earth of flints, which constitutes the basis of all commercial glass, is infusible by itself in the strongest fire of our furnaces; but its vitreous fusion is easily effected by a competent addition of potash or soda, either alone or mixed with lime or litharge. The window-glass manufacture was first begun in England in 1557, in Crutched Friars, London; and fine articles of flint-glass were soon afterwards made in the Savoy House, Strand. In 1635 the art received a great improvement from Sir Robert Mansell, by the use of coal fuel instead of wood. The first sheets of blown glass, for looking-glasses and coach windows, were made in 1673 at Lambeth, by Venetian artisans employed under the patronage of the duke of Buckingham. The casting of mirror-plates was commenced in France about the year 1688, by A. Thevart; but in excellence and cheapness, the French mirror-plate has been for some time rivalled by the English. There are five distinct species of glass, each requiring a peculiar mode of fabrication, and peculiar material: 1. Bottle glass, which is the coarsest and most simple of any. 2. Broad or coarse window glass; of which there is an improved kind now made near Birmingham, and called British or German plate. 3. Crown glass, or the best window glass, formed in large circular plates. 4. Flint glass, crystal glass, or glass of lead. 5. Plate or fine mirror glass. The materials of every kind of glass are vitrified in pots made of a pure refractory clay. The glass-pots are placed round a dome-shaped furnace, built upon arches, and open beneath for the free admission of air; there are generally six in each furnace, and they are entirely enclosed, except at an orifice on the side opening into a small recess formed by the alternate projection of the masonry and the flues, in which the workmen stand. Coal is the fuel employed, and the furnace is so built that a rapid current of flame may be directed round each glass-pot, which afterwards passes out with the smoke into the dome and chimney, heating a broad covered shelf in its passage, which is the annealing oven. The materials, or fret, being fused, and the impurities removed, it gradually becomes clearer, abundance of air-bubbles are extricated, and at length the glass appears uniform and complete; the fire round each individual pot is then damped, till its contents acquire a consistency fit for working; the whole process requiring about forty-eight hours from the time the pots are filled. At the working heat, which is a full red, the glass has a peculiarly tenacious consistency, and as it adheres but feebly to polished metals, it is easily wrought and managed with iron tools. Various ornamental forms are also given to the surface of glass vessels by metallic moulds. The mould is usually of copper, with the figure cut on its inside, and opens with hinges to permit the glass to be taken out.—Those readers who consult our pages must be aware that in an article of this nature it is impossible to describe the various manipulations in glass-making, with anything like minuteness of detail; we shall therefore not attempt it, but conclude with a quotation from an old English historian, who, in 1584, thus writes: "Of old time, our country houses instead of glasse did use much lattise, and that made either of wicker or fine rifts of oak in checkerwise. I read also that some of the better sort, in and before the time of the Saxons, did make panels of horne instead of glasse, and fit them in wooden calures (casements); but as horne in windowes is now quite laid down in everie place, so our lattises are grown into disuse, because glasse is come to be so plentiful, and within verie little so good, cheape, if not better than the other."——*Glass-house*, a manufactory in which silex or flint dust, and fixed alkalies are melted, so as to produce a fluid, which, when cold, constitutes glass, but which, while liquid, may be moulded, blown, or drawn into any shape, as before described.——*Glass-Blower*. The materials of glass when fluid, are so perfectly ductile and plastic, that the glass is blown into shapes with the breath of the workman, through an iron pipe, about three feet long, assisted by a few very trifling tools. He dips the end of his blow-pipe



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THE GLASS SQUARES IN COTTAGES, &c., ARE CALLED "QUARRIES."



into the melting pot, through the hole in the furnace, and the fluid which sticks to the iron is blown with proper skill; a boy generally assisting in the operation, who, while it is still red hot, joins to the blown vessel any peculiar parts. When finished, it is placed in an upper furnace, and kept in a red heat for some hours.

GLASSES, Optical. Glasses intended for optical purposes are spherically ground, and called lenses. They are either convex or concave, and used either as simple magnifiers and spectacles, or for telescopes and microscopes. The grinding of the lenses is performed in brass moulds, either concave or convex, formed to the same curvature as that desired in the lenses; and may be worked either by hand or by machinery.

GLASS'WORT, in botany, the *Salsola*, a plant of many species, all of which may be used in the manufacture of glass. Barilla is the semifused ashes of the *Salsola soda*, which is extensively cultivated in Spain.

GLAU'BERITE, a mineral of a grayish white or yellowish colour, consisting of dry sulphate of lime and dry sulphate of soda.

GLAU'BER-SALT, in chemistry, sulphate of soda, a well known cathartic.

GLAUCO'MA, in surgery, a disease in the eye, in which the crystaline humour has a greenish or bluish gray appearance, and its transparency is diminished.

GLA'ZING, in the manufacture of pottery, the encrustation of vessels with a vitreous substance, the basis of which is lead. After the ingredients are ground together, they are calcined with a moderate heat; and, when cold, reduced to powder. When wanted, the powder is tempered with water, and laid on the ware by means of a brush. Placed in a furnace, the violent heat soon transforms this coating into a perfect glass.

GLEBE LAND, in law, a portion of meadow or pasture land belonging to a parish church or ecclesiastical benefice.

GLEE, in music, a composition of three or more parts; originally used for convivial purposes.

GLENE, in anatomy, the cavity or socket of the eye, and the pupil. Also any slight depression or cavity receiving a bone in articulation.

GLENOI'DES, in anatomy, a name for two cavities in the lower part of the vertebræ of the neck.

GLI'ADINE, in chemistry, one of the constituents of gluten, a slightly transparent, brittle substance, of a straw colour, and in smell resembling the honeycomb.

GLIM'MER, a mineral, resulting from crystalization, usually appearing in thin, flexible laminæ, which exhibit a high polish and strong lustre. It is an essential ingredient in granite, gneiss, and mica slate.

GLI'RES, the fourth order of the class *Mammalia* in the Linnæan system, including such animals as have two fore teeth, a cutting one in each jaw, no tusks, and feet with claws formed for running, as the beaver, the hare, &c.

GLIS'CERE, in medicine, a term sometimes applied by physical writers to the natural heat and increase of spirits; as also to the exacerbation of fevers which return periodically.

GLISCHROCHOLOS, in medicine, an epithet for bilious viscid excrements.

GLOBE, in practical mathematics, an artificial spherical body, on the convex surface of which are represented the countries, seas, &c. of our earth; or the face of the heavens, with the several circles which are conceived upon them. That with the parts of the earth delineated upon its surface, is called the *terrestrial globe*; and that with the constellations, &c. the *celestial globe*. Their principal use, besides serving as maps to distinguish the earth's surface, and the situation of the fixed stars, is to illustrate and explain the phenomena arising from the diurnal motion of the earth. They are consequently of the highest importance in acquiring a knowledge of geography and astronomy. [See Earth, Astronomy, Armillary Sphere, &c.]

GLOBULA'RIA, in botany, a genus of plants, class 4 *Tetandria*, order 1 *Monogynia*. The species are perennials. The leaves of the *Globularia Alypum* are sometimes used medicinally, and are said to act as a powerful but safe cathartic.

GLOBULAR CHART, a name given to the representation of the surface, or of some part of the surface of the terrestrial globe upon a plane, wherein the parallels of latitude are circles, nearly concentric, the meridian curves bending towards the poles, and the rhumb-lines are also curves.

GLOBULE, a small particle of matter of a spherical form; a word particularly applied to the red particles of blood, which swim in a transparent serum, and may be discovered by the microscope.

GLOM'ERATE, in anatomy, an epithet for a gland formed of a conglomeration of sanguineous vessels, having no cavity, but furnished with an excretory duct, as the lachrymal and mammary glands.

GLOMERA'TUS, in botany, an epithet that signifies growing together in a globular form, as *spica glomerata*, a spike having the spikelets variously heaped together: *panicula glomerata*, a glomerate panicle having the flowers heaped pretty close together.

GLOSSA'GRA, in medicine, a rheumatic pain in the tongue.

GLOSS'ARY, a dictionary or vocabulary, explaining obscure or antiquated words found in old authors.

GLOSSO-PHARYNGE'AL NERVES, in anatomy, the ninth pair of nerves. They arise from the processes of the *cerebellum*, which run to the *medulla spinalis*, and terminate by numerous branches in the muscles of the tongue and pharynx.

GLOSSOCE'LE, in medicine, an extrusion of the tongue.

GLOT'TIS, in anatomy, the narrow opening at the upper part of the *asperia arteria* or wind-pipe, which, by its dilatation and contraction, contributes to the modulation of the voice.

GLOW'-WORM, in entomology, an insect



GLASS DOES NOT ACQUIRE THE PROPERTY OF REFLECTING OBJECTS TILL ONE SIDE HAS BEEN COATED WITH TIN AND QUICKSILVER.

THERE IS NO AUTHENTIC EVIDENCE OF GLASS BEING USED IN WINDOWS PREVIOUSLY TO THE THIRD OR FOURTH CENTURY.

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NITRIC ACID, WITH THE AID OF HEAT, CONVERTS GLUE INTO MALIC ACID, OXALIC ACID, A SUBSTANCE LIKE SUET, AND INTO TANNIN.

of the genus *Lampyris*, remarkable for its luminous appearance in the dark, which proceeds from a vivid phosphoric light with which nature has provided it. The glow-worm is seen about the months of June, July, and August. The light which is perceived towards the lower extremity of its body, is produced by a phosphoric liquor. The insect has the power of varying the degree of its brightness, and even of wholly extinguishing it; so that if an observer approach the spot where he has perceived it, it often happens that the creature renders itself wholly invisible. It seems probable, that it does not emit light, either when moving, or when apprehensive of danger. The lights, which are perceived along the ground, are never seen to change their places; and if the insect be taken, and carried in such a manner that it is itself at rest, it will shine during the whole journey, yet when set down, even in the dark, it will immediately withdraw its luminousness. If, in this case, a light be procured, it will be found that it is crawling in search of a station.—So much has been written on the glow-worm's light, and so many theories have been advanced, that we may, perhaps, be excused for devoting more space than the subject may appear to deserve, in noticing what has been said on the economy of this curious insect. A correspondent of the "Philosophical Magazine" describes it as follows: "The female deposits her eggs in the month of June or July, among moss, grass, &c. These eggs are of a yellow colour, and emit light. After remaining about five or six weeks, the larvæ break their shells and make their appearance; at first they appear white, and are very small, but they soon increase in size, and their colour changes to a dark brown, or nearly black. The body of the larva is formed of eleven rings. It has six feet, and two rows of reddish spots down the back. It emits light in the dark; this light arises from the last ring of its body under the tail, and appears like two brilliant spots when attentively examined. The larvæ are seen creeping about, and shining during the fine nights of autumn, and the light they emit is to direct them to their food. They feed on small snails, the carcases of insects, &c. They frequently cast off their skins: after the expiration of about one year and nine months from their birth, they arrive at their perfect size. They then cease to eat, cast off their skin, and assume another appearance. The form of the perfect insect may be discovered through a thin skin that covers them. After remaining in this state two or three weeks, (scarcely ever moving) they throw off their last skin and arrive at perfection. The male then appears a perfect beetle, with wings and cover to the same. The female, on the contrary, has neither wings, nor wing-cases; she is larger than the male, and of a lighter colour. It is the female that principally shines in a perfect state. Her light is far superior to that emitted by the larvæ, and arises from the three last rings of the body on the lower side." In Mr. John Murray's "Researches" the cause, nature, and uses of this phenomenon are skilfully treated; and he thus concludes his ingenious observations: "The use to which it is subservient in the animal economy, it is difficult to ascertain—'we see but in part.' Its very existence, however, proves that it is a condition indispensable to its being. Providence has tipt the insect with living fire—a non-material ignition—burning, yet not consumed—even extinguished by a temperature which the animal system, with which it is so singularly interwoven, cannot withstand. It may be a 'lamp to its path,' to guide it to its food, subserving the additional purpose of warding off its enemies—while it may also be the luminous point that directs the nightingale to its proper prey."

GLU'CINE, or GLUCI'NA, a very rare earth, of a sweetish taste, which was discovered in analysing the beryl. It is infusible in the fire and insoluble in water, but combines with acids, making with them soluble salts.

GLUE, inspissated animal gluten; a tenacious viscid matter, which serves as a cement. It is made from the parings of hides and other offals by boiling them in water, then straining off the impurities and boiling them again. The best glue is that which is oldest; and the surest way to try its goodness, is to lay a piece to steep three or four days, and if it swell considerably without melting, and when taken out resumes its former dryness, it is excellent.

GLUME, in botany, the calyx or corolla of grasses.

GLU'TEAL, in anatomy, an epithet for a branch of the hypogastric or internal iliac artery, which supplies the *gluteal muscles;* the latter being three large muscles on each side of the rump.

GLUTEN, an adhesive and elastic substance, similar to glue, which is procured by the decomposition of wheat flour or other vegetable substances. It contributes much to the nutritive quality of flour, and gives tenacity to its paste. It has some resemblance to animal tendon or membrane, is very tenacious, and may be used as a cement for broken porcelain vessels. When dried in the air or a stove, gluten diminishes greatly in size, becomes hard, brittle, glistening, and of a deep yellow colour. It is insoluble in ether, in fat and essential oils, and nearly so in water.

GLUTINOUS, in botany, an epithet applied to a leaf, &c. which is beameared with a slippery moisture.

GLUTTON, in zoology, an animal of the genus *Ursus*, found in the north of Europe and Siberia. It grows to the length of three feet, but has short legs, and moves slowly. It is very voracious, and in order to catch its prey, it climbs a tree, and from that darts down upon its victim.

GLY'CERINE, in chemistry, a sweet substance which may be extracted from fats. Its constituent parts are carbon, hy-

COMMON GLUE IS NOT SOLUBLE IN ALCOHOL, BUT IS PRECIPITATED IN A WHITE, COHERENT, ELASTIC MASS: A LITTLE CHLORINE SUFFICES FOR IT.



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American bird, of the genus *Caprimulgus*; so called because it was supposed to suck the teats of the goats. Like the owl, this bird is seldom seen in the day-time, unless disturbed, or in dark and gloomy days when its eyes are not dazzled by the bright rays of the sun.

GOBELINS, or HOTEL-ROYAL DE GOBELINS, a celebrated academy for tapestry-drawing, and manufactory of tapestry, erected in the suburb of St. Marcel, at Paris, by Louis XIV. in the year 1666. The place was previously famous on account of the dyeing manufactory established there by Giles and John Gobelins, in the reign of Francis I. These eminent dyers discovered a method of producing a beautiful scarlet, which has ever since been known by their name; and so extensive has been their fame, that not only the colour, but the house in which their business was carried on, and the river they made use of, are called *Gobelins*.

GOBY, (the *Gobius* of Linnæus) in ichthyology, a salt-water fish, of the acanthopterygious genus, of which there are many species, but none of them are much esteemed as food.

GOD, the appellation which we give to the Creator and Sovereign of the Universe; the Supreme Being.——The words *god* and *goddess* are also the appellatives common to the heathen deities; which they divided into *dii majorum gentium*, and *dii minorum gentium*; that is, into the superior and inferior gods. Another division was taken from their place of residence; thus there were celestial, terrestrial, infernal, marine, and sylvan gods. They were also divided into animal and natural gods: the animal gods were mortals, who had been raised to divinity by ignorance and superstition; and the natural gods, the parts of nature, such as the stars, the elements, mountains, rivers, &c. There were also deities, who were supposed to preside over particular persons: some had the care of women in child-birth; others, the care of children and young persons; and others were the deities of marriage. Each action, virtue, and profession had also its particular god: the shepherds had their Pan; the gardeners, their Flora; the learned, their Mercury and Minerva; and the poets, their Apollo and the Muses.

GOD'FATHER, and GOD'MOTHER, the man and woman who are sponsors for a child at baptism; who promise to answer for his future conduct, and solemnly promise that he shall follow a life of piety and virtue, by this means laying themselves under an indispensable obligation to instruct the child and watch over his conduct. This practice is of great antiquity in the Christian church, and was probably instituted to prevent children being brought up in idolatry, in case their parents died before they arrived at years of discretion.

GOD'WIT, in ornithology, a fowl of the grallic order and genus *Scolopax*. It has a bill four inches long; the feathers of the neck, head, and back, are of a reddish brown; those on the belly white, and the tail is regularly barred with black and white. This fowl frequents fens and the banks of rivers, and its flesh is esteemed a great delicacy.

GOI'TRE, in medicine, a large tumour that forms gradually on the throat between the trachea and the skin.

GOLD, a precious metal of a bright yellow colour, and the most ductile and malleable of all the metals. It is the heaviest metal except platina, being the most solid and the least porous: and not being liable to be injured by air, it is well fitted to be used as coin. It is wholly incapable of rust, and not sonorous when struck upon. Its lustre does not equal that of steel, platina, or silver, but it surpasses the other metals in this respect. It requires a strong fire to melt it, remaining unaltered in the degree of heat that fuses tin or lead, but running with a less potent heat than is necessary to the fusing of iron or copper. It does not retain its colour till the time of its melting, but becomes ignited and white before it runs, and when in fusion, it appears of a pale bluish green colour on the surface. It amalgamates the most readily of all the metals with quicksilver. When in a state of fusion, it very easily and very intimately blends itself with silver, and when mixed with that metal, will also run into a mass with iron. The ductility and malleability of gold is such, that one grain of it will cover upwards of fifty square inches, and an ounce is capable of being extended in the form of wire many hundred miles. The heat of the strongest furnace does not change the metallic properties of gold; but by a long continued application of the violent power of the sunbeams, collected in the focus of a burning-glass, and instantaneously by means of the electric fluid, it may be calcined, and even reduced to glass. Gold is found in beds of quarts, sand-stone, &c. and also in many rivers, particularly in Peru, in minute and irregular grains, which are known by the name of *gold dust*. The mineral formations in which this metal occurs, are the crystaline primitive rocks, trap rocks, and alluvial grounds. It never predominates to such a degree as to constitute veins by itself. It is either disseminated or spread out in thin plates or grains on their surface, or implanted in their cavities under the shape of filaments or crystalized twigs. The principal use of gold, as is well known, is in coinage. It has been with mankind, from time immemorial, the representative sign of every species of property. Even before the art of coining was invented, it passed for money in the condition in which it was found in the earth; and in this form it still enjoys a currency in many parts of Africa. It is rarely employed in a state of perfect purity, but is almost universally alloyed with copper, or with silver, in order to increase its hardness.

GOLDBEATERS' SKIN, the skin or membrane of any animal, particularly the *intestinum rectum* of an ox, which goldbeaters lay between the leaves of the metal



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SOUTH AMERICA FURNISHES THREE AND A HALF TIMES MORE GOLD, AND TWELVE TIMES MORE SILVER, THAN EUROPE, ASIA, AND AFRICA.

IN FORTY YEARS (FROM 1790 TO 1830) THE GOLD AND SILVER DUG FROM ALL THE MINES IN THE WORLD, AMOUNTED TO 1800 MILLIONS STERLING.

while they beat it, whereby the membrane is rendered very thin, and made fit to be applied to cuts and fresh wounds.

GOLDEN NUMBER, in chronology, is that number which indicates the year of the lunar cycle, for any given time. It was called the Golden Number, because in the ancient calendar it was written in letters of gold, on account of its great usefulness in ecclesiastical computations, especially in fixing the time of Easter. It was likewise called the Prime, because it pointed out the first day of the new moon, *primum lunæ*. To find the Golden Number, add 1 to the year of our Lord, divide the sum by 19, and the remainder is the Golden Number, the quotient at the same time expressing the number of cycles which have revolved from the beginning of the year preceding the birth of Christ.

GOLDEN-FLE'ECE, in the mythological fables of the ancients, signified the skin or fleece of the ram upon which Phryxus and Hella are supposed to have swum over the sea to Colchis; which being sacrificed to Jupiter, its fleece was hung upon a tree in the grove of Mars, guarded by two brazen-hoofed bulls, and a monstrous dragon that never slept; but was at last taken and carried off by Jason and the Argonauts.

GO'LDEN-ROD, in botany, a genus of plants, belonging to the natural order *Compositæ*, containing many species, whose brilliant yellow flowers are very conspicuous in the autumnal months. They are perennial, chiefly herbaceous, with simple, undivided leaves, and bear numerous small flowers, disposed in spikes or panicles.

GOLD'FINCH, in ornithology, the name of a species of *Fringilla (fringilla carduelis)*, with its wings variegated with black, yellow, and white. The common goldfinch is a very elegantly coloured bird, somewhat smaller than the common sparrow. There are several other species, as the Greenland goldfinch, with a black spotted head, about the size of the common linnet; and the greenish yellow goldfinch, which is a most elegant bird; the fore-part of its head, and the upper part of the throat being covered with fine scarlet-coloured feathers, the top of the head ash-coloured, and the upper part of the body a yellowish-green.

GOLD-FISH', in ichthyology, an elegant fish of a gold colour, of the genus *Cyprinus*, and of the size of a pilchard. It was originally brought from China, and is now kept in small ponds, glass globes or other vessels, by way of ornament. They are said to be very prolific, and are easily bred, requiring scarcely any farther attention than that of frequently changing the water.

GOLD-LEAF', or LEAF-GOLD', gold that is foliated or beaten into a thin leaf. The thickness varies according to the purpose for which it is designed: that which is intended for gold-wire is much thicker than that for the frames of pictures. Gold is beaten on a block of marble, with hammers of polished iron. It is first reduced from the ingot to the thickness of paper; then cut into pieces of about an inch square; placed between skins; beaten thinner; and divided into squares, and again beaten, until it has acquired the necessary degree of thinness. The finished leaves of gold are put up in small books made of single leaves of soft paper, rubbed over with red chalk to prevent adhesion between them. Boyle has observed that a grain of gold, reduced to leaves, will cover a surface of fifty square inches, that each one of these square inches may be divided into 46,656 other little squares, and that, of course, the entire amount of surface derived from one grain of gold is capable of being divided into 2,332,800 parts, each of which is visible to the naked eye. In short, such is the wonderful extension which the gold-beater is enabled to give to this precious metal, that it has been estimated that an equestrian statue, of the natural size, may be gilded with a piece of gold not exceeding in value ten shillings.

GOLD-WI'RE, a cylindrical ingot of silver, superficially gilt, and afterwards drawn through a vast number of holes of different bores (according to the process of wire-drawing) in order to bring it to the requisite fineness, which is sometimes equal to that of a hair. Before each time of drawing, it is covered with wax, to save the gold from being worn away.——*Gold-wire flatted*, the wire already described, flatted between rollers of polished steel, and used in spinning, weaving, lace-making, and embroidery.——*Gold thread*, or *spun gold*, is a flatted silver-gilt wire, wrapped or laid over a thread of yellow silk, by twisting with a wheel and iron bobbins.

GO'LDSMITH, an artisan who manufactures vessels and ornaments of gold and silver. Also, one who deals in gold or silver vessels. The company of goldsmiths were incorporated in the reign of Richard II.

GO'LDYLOCKS, a name given to certain plants of the genera *Crysocoma* and *Gnaphalium*.

GOLF, a game with bat and ball, much practised in the north of England.

GOM'PHOSIS, in anatomy, a species of articulation, wherein one bone is set in the other, like a nail or peg; as the teeth within the jaws.

GONU'TI, in botany, the *Borassus gomutus*, a species of palm, growing in the Indian islands; from the back of which a valuable fibrous substance is obtained that is manufactured into cordage. It undergoes no preparation but that of spinning and twisting; no material similar to our tar or pitch being necessary, as it possesses, in a remarkable degree, the quality of resisting alternations of heat and moisture.

GONG-GONG, or TAMTAM, a kind of cymbal used by the Chinese, made of copper alloyed with tin.

GON'DOLA, a flat-bottomed boat, generally about thirty feet long and four broad, terminating at each end in a sharp point or peak rising to the height of a man. It is much used at Venice on the canals, and in other parts of Italy, for a passage boat. It



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is usually rowed by two men, called *gondoliers*.

GONG, a Chinese musical instrument, of a circular form, made of tin and copper, which vibrates on being struck with a wooden mallet covered with leather.

GONIOMETER, an instrument for measuring solid angles, or the inclination of planes.

GOOS'ANDER, in ornithology, a migratory fowl of the genus *Mergus*, the diver or plunger.

GOOSE, a well known domestic fowl, of the genus *Anas*, which exists in a wild as well as a tame state. The gray lay goose, or common wild goose, is the largest of the British species, and is easily tamed: from this sort has sprung the domestic breed. There are, however, many other species.

GOOS'EBERRY, in botany, a shrub (the *Ribes grossularia*) that is set with prickles, and yields a fruit of an oval and globular figure, containing many small seeds in a pulpy substance. It is a bush much cultivated in gardens.

GOOS'EFOOT *(Chenopodium)*, a genus of plants, containing twenty-six species, most of them indigenous to the temperate parts of the eastern continent. Many of the species grow abundantly in waste places throughout Europe; and we are told that the young shoots are sometimes eaten as asparagus. The *Chenopodium quinoa* of Chili is very celebrated in that country, and is carefully cultivated both for the leaves and seeds; the latter of which are used instead of millet.

GOOSE-NECK, in a ship, a piece of iron fixed on the end of the tiller, to which the lanyard of the whip-staff, or the wheel-rope comes, for steering the ship.

GOOS'EWING, in seaman's language, a sail set on a boom on the lee side of a ship; also the clews or lower corners of a ship's main-sail or fore-sail when the middle part is furled.

GOR'DIAN KNOT, in antiquity, a knot made in the harness of the chariot of Gordius, king of Phrygia, so very intricate, that there was no finding where it began or ended. An oracle had declared that he who should untie this knot should be master of Asia. Alexander having undertaken it, and fearing that his inability to untie it should prove an ill augury, cut it asunder with his sword, and thus either accomplished or eluded the oracle. Hence, in modern language, *to cut the Gordian knot* is to remove a difficulty by bold or unusual means.

GOR'DIUS, the Hair-worm, a genus of the *Vermes Intestina*, of which there are five species. The *Gordius aquaticus* is of the thickness of a hog's bristle, and from six to ten inches long; is found in stagnant waters, and twists itself into various contortions and knots. The head is obtusely conical, with a simple circular terminal pore for a mouth, from which a sort of membrane can be forced by pressure. The skin is smooth, but within an inch of the tail there is a small space which is roughened on the sides with very minute granules. The tail is bifid, the processes short, equal, and obtuse. This singular worm is in perpetual motion and change; and its never-ceasing contortions have a sort of painful character, which involuntarily suggest a comparison of it to "the worm that never dieth."

GORGE, in architecture, the narrowest part of the Tuscan and Doric capitals, lying between the astragal, above the shaft of the column and the annulets.——In fortification, the entrance of a bastion, ravelin, or other outwork.

GOR'GED, in heraldry, bearing a crown, coronet, or the like, about the neck.

GOS'HAWK, in ornithology, a voracious fowl of the genus *Falco*, larger than the common buzzard, but of a more slender shape.

GOS'PEL, a revelation of the grace of God to fallen man through a mediator, including the character, actions, and doctrines of Jesus Christ, with the whole scheme of salvation, as revealed by Christ and his apostles, and handed down to us by the four Evangelists.

GOS'SAMER, a fine filmy substance, like cobwebs, floating in the air in calm clear weather, especially in autumn. It is mostly seen in stubble fields and on furze or low bushes, and is supposed to be formed by a species of spider.

GOSSYPIUM, Cotton, a genus of plants of which there are ten species; most of these are Asiatic plants, but some are of American growth and culture. [See COTTON.]

GOTHIC STYLE, in architecture, a style in which pointed arches of greater height than breadth, and a profusion of ornaments, in imitation of leaves and flowers, are the principal characteristics.

GOV'ERNMENT, that form of fundamental rules and principles by which a nation or state is governed. If this power be vested in the hands of one, it is a *monarchy*; if in the hands of the nobility, an *aristocracy*; and if in the hands of the people, or those chosen by them, a *democracy*. The *executive government* is the power of administering public affairs; the *legislative government*, that of making the laws. In England, the executive government is in the king (or queen regnant) and his ministers; but the legislative government is in the parliament, that is, the king, lords, and commons; whence the constitution of England is denominated a *mixed government*.——*Government* is also a post or office which gives a person the power or right to govern or rule over a place, a city, or province, either supremely or by deputation. Thus, the government of Ireland is vested in the lord-lieutenant.——*Government*, in grammar, the influence of a word in regard to construction, as when established usage requires that one word should cause another to be in a particular case or mood.

GOUGE, an instrument or tool, used by various artificers, being a sort of round



"SAFETY AND EQUAL GOVERNMENT ARE THINGS, WHICH SUBJECTS MAKE AS HAPPY AS THEIR KINGS."—WALLER.

"THOSE GOVERNMENTS WHICH CURB NOT, EVILS CAUSE; AND A RICH KNAVE'S A LIKEL ON OUR LAWS."—YOUNG.

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hollow chisel for cutting or hollowing out either wood or stone.

GOURD, or CAL'ABASH, a climbing plant, bearing a pulpy edible fruit; allied to the cucumber, melon, squash, &c., and has been cultivated from time immemorial in the warmer parts of Asia and Africa, and also by the aborigines of America, previous to its discovery by the Europeans. The leaves are rounded and slightly viscous; the flowers white, and somewhat stellated; and the fruit large, varying much in shape in different varieties. In Egypt and Arabia the lower classes boil it in vinegar, or make it into a sort of pudding by filling the shell with rice and meat.

GOUT, or ARTHRITIS, in medicine, a very painful disease, the principal seat of which is in the joints and ligaments of the feet. It is often periodical or intermitting. It is a disease which seldom attacks young people, and is attended with the secretion of the superfluous earthy matter, which is no longer necessary for the formation of the bones, but which, instead of being carried off by the organs of secretion, is deposited beneath the skin, or accumulates internally, thus producing chalk stones and various internal concretions.

GRACE, in objects of taste, a certain species of beauty, which appears to consist in the union of elegance and dignity.——In theology, the free unmerited love and favour of God; or the divine influence in restraining from sin.——*Days of Grace*, in commercial law, three days allowed for the payment of a bill after it has become due.——The word *grace* is also used in speaking of or to a duke or duchess, as your Grace, his or her Grace.——*The Graces*, among the heathen world, were female beauties deified: they were three in number; Aglaia, Thalia, and Euphrosyne, the constant attendants of Venus.——In music, *graces* are turns, trills, and shakes, introduced for the purpose of embellishment.

GRA'CILIS, in anatomy, a muscle of the leg, so called from its slenderness.

GRADATION, in general, the ascending step by step, or proceeding in a regular and uniform manner. It also means a degree in any order or series. Thus we say, there is a *gradation* in the scale of being; or we observe a *gradation* in the progress of society from a rude state to civilized life.——*Gradation*, in logic, is an argumentation, consisting of four or more propositions, so disposed, as that the attribute of the first is the subject of the second; and the attribute of the second, the subject of the third; and so on, till the last attribute come to be predicated of the subject of the first proposition.——*Gradation*, in chemistry, a process by which metals are gradually raised to a still higher degree of purity.

GRA'DIENT. The literal meaning of this word is, "moving by steps;" but it has lately been used technically to denote, in reference to railways, their deviation from a level surface to an inclined plane.

GRAD'UATE, one who has obtained a degree at an university, or from some professional incorporated society, after a due course of study, and suitable examination.

GRAFTING, in horticulture, the process of inserting a branch of one tree into the stock of another, so that it may receive nourishment from it, while at the same time it produces a new tree, like the old one whence the graft was taken. The use of grafting is to propagate any curious sorts of fruits, so as to be certain of their kinds. All good fruits have been obtained accidentally from seeds; and of the seeds of these it is wholly uncertain whether they will produce fruit worthy of cultivation; but when shoots are taken from such trees as bear good fruit, no alteration need be apprehended. The reason of the advantages obtained by grafting is differently explained; but it seems probable that they should be attributed to the greater facility with which the tender cion can assimilate the juices already prepared by the stock, than those which it must draw immediately from the earth, if planted.

GRAIN, the generic name of the seeds of wheat, barley, oats, rice, &c. All kinds of grain contain nutritious particles of a similar character, although they vary, both in their quantity and in their mixture, in various grains; but their most valuable elements are,—*gluten*, which affords the strongest nourishment for the animal body; *fecula* or *starch*, which, though not so nutritious as gluten, seems to render it more digestible; and a *sweet mucilage*, which is more nutritious than starch, but is small in quantity, and renders the grain liable to the vinous and acetous fermentation.——It is likewise the name of a small weight, the twentieth part of a scruple in apothecaries' weight, and the twenty-fourth part of a penny-weight troy.——*Grain* also denotes the component particles of stones and metals, the veins of wood, &c. Hence *cross-grained*, or *against the grain*, is, contrary to the fibres of wood, &c.——*Grains* (in the plural), the husks or remains of malt after brewing, or of any grain after distillation.

GRAINS OF PAR'ADISE, a narcotic pepper, brought from Guinea, and, according to the opinions of some writers, much used by brewers.

GRAL'LÆ, in ornithology, the fourth order of birds, with obtuse bills and long legs, as cranes, snipes, bustards, storks, and ostriches.

GRAL'LIC (from *grallæ*), in ornithology, an epithet given to an order of fowls having long legs, naked above the knees, which fit them for wading in water.

GRAM'INA, or GRASSES, the most numerous family of plants, common to all countries, but varied in species by soil and elevation. An English meadow in natural grass often exhibits a hundred several species. But the most productive grasses have been specially cultivated, and we now have fields sown with rye-grass, red clover, trefoil, sanfoin, lucerne, &c. &c., called artificial grasses. Nor must we omit to mention, that the *grasses* include wheat, rye, barley,



"BUT ALL THINGS IN THEIR OWN PECULIAR PLACE; AND KNOW THAT ORDER IS THE GREATEST GRACE."—DRYDEN.

PARTICULAR KINDS OF GRAIN GROW WILD IN SOME COUNTRIES, BUT THEY HAVE NOT THE PERFECTION OF OUR CULTIVATED GRAIN.

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POMPEY'S PILLAR, AT ALEXANDRIA, CONSISTS OF A SINGLE BLOCK OF RED GRANITE, UPWARDS OF SIXTY-SEVEN FEET HIGH.

oats, rice, Indian corn, and the sugar-cane; their chief characteristic being that their stems or culms are cylindrical and provided at intervals with knots, from each of which arises a long linear or lanceolate leaf, sheathing the stem for some distance.

GRAMIN'EOUS, in botany, an epithet for plants belonging to the family of *grasses*, having simple leaves, a jointed stem, a husky calyx, termed *glume*, and a single seed.

GRAM'MAR, the art which analyzes and classes the words in a language, which details its peculiarities, and furnishes rules, recognized by the best authorities, for its construction. General grammar teaches the principles which are common to all languages; and the grammar of any particular language teaches the principles peculiar to that language. Grammar treats of sentences, and of the several parts of which they are compounded. Sentences consist of words; words of one or more syllables; syllables of one or more letters; so that, in fact, letters, syllables, words, and sentences, make up the whole subject of grammar.—By means of inarticulate sounds beasts can express certain feelings; but man is distinguished from the brute creation by the power of modifying a much greater variety of sounds, and of fixing to each modification a particular meaning. The sounds thus modified are called words, and as words have no natural relation to the ideas and perceptions of which they are significant, the use of them must either have been the result of human sagacity, or have been suggested to the first man by the Author of nature.——*Grammar* is also used for a book containing the rules of this art, methodically digested; as, "Murray's English Grammar," "Moody's New Eton Latin Grammar," &c.

GRAMME, a French measure of weight, equal to 22·966 grains English.

GRAND JU'RY, a jury convened by the Sheriff to examine into the grounds of accusation against offenders, and validity of indictments. Offenders against whom true bills are found by the grand jury are afterwards tried before a petty jury.

GRANDEE', a designation given to a nobleman of Spain or Portugal.

GRAN'ITE, a primary rock, of uniform structure, composed of particles of quartz, mica, and felspar, crystalized, and cohering without cement. It is the foundation rock of the earth, on which others lie, but raised in mountains whose lofty peaks are formed of it. The aspect of granitic mountains is extremely diverse, depending, in part, upon the nature of its stratification, and the degree of disintegration it has undergone. In Europe, the central part of the principal mountain ranges is of this rock, as in Scandinavia, the Alps, the Pyrenees, and the Carpathian mountains. In Asia, granite forms a considerable part of the Uralian and Altaic ranges of mountains; and it appears also to compose the principal mountains that have been examined in Africa. The colour of granite is greatly diversified by the different colours and proportions of the component parts.

GRAN'ITEL, in mineralogy, a granitic compound containing two constituent parts, as quartz and felspar, or quartz and hornblende.

GRAN'ITIN, in mineralogy, a granitic aggregate of three species of minerals, some of which differ from the species which compose granite; as quartz, felspar, and jade or shorl.

GRANT, in law, a gift in writing of such things as cannot conveniently be passed or verbally conveyed.

GRANULA'TION, the act of forming into grains. The process by which a metal is reduced into grains is effected by melting the metal, and then pouring it in a very thin stream into cold water. As soon as the metal comes in contact with water it divides into drops, which have a tendency to a spherical shape, and are more or less perfect, according to the thinness of the stream, the height from which it falls, and the temperature of the metal. Some of the more fusible metals may be reduced to much finer grains, by pouring it, in its melting state, into a wooden box, rubbed over with chalk, and shaking it violently before it has time to become solid.——In medicine, the little, grain-like, fleshy bodies, which form on the surfaces of ulcers and suppurating wounds, and serve both for filling up the cavities and bringing nearer together and uniting their sides, are called *granulations*. The colour of healthy granulations is a deep florid red, and are always prone to unite. When livid, they are unhealthy, and have only a languid circulation.

GRAPE, the fruit of the vine, growing in clusters, from which wine is expressed. Grapes are found by a chemical analysis to contain supertartrate of potash, tartaric acid, citric and malic acids, abundance of sugar, a portion of mucilage, jelly, some albumen, and also, as is said, some gluten. France, Spain, Portugal, and Italy, as well as some parts of Germany, produce grapes which yield wines of various qualities and flavours, some of them highly esteemed. The climate of England is not so favourable to their proper ripening, but the grapes we raise in hot-houses are generally superior to those which we import green from Malaga and other ports of Spain. When dried and preserved, they are called *raisins*.——Whether or not the vine will ever be cultivated to any advantageous extent in England, we are incompetent to form a correct judgment; but we think it due to Mr. Clement Hoare,—whose skill and industry (as we can personally attest) have been for many years most successfully directed to this end,—to advise all who may be desirous of gleaning sound practical and scientific information on this particular branch of horticulture, to consult the treatise he has published on its growth and culture. He has there, most unquestionably, given examples of native produce, which hold out an encouraging prospect of our becoming independent of "the vine-covered hills," if

GRAPES SHOULD HANG ON THE VINE TILL THEY ARE PERFECTLY RIPE, FOR IF UNRIPE WHEN GATHERED THEY WILL NEVER RIPEN.



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not of entering into competition with our continental neighbours.—We observe that Mr. H. has availed himself of the popular method of discussing the merits of his plans, by a course of lectures delivered at the Mechanics' Institution, Winchester; the neighbourhood of which city, he says, is highly favourable to the growth of the vine. Alluding more especially to the southern coast of this island, where alone the solar heat is sufficiently powerful to ripen the fruit, he emphatically observed, that "every cottager should possess a vine, which, if properly treated, would produce him sufficient fruit to pay his rent."

GRAPE-SHOT, in artillery, a combination of small shot put into a thick canvass bag, and corded so as to form a kind of cylinder.

GRAPH'ITE, in mineralogy, carburet of iron; that substance used for pencils, which is very generally called *black-lead*.

GRAPHOM'ETER, a mathematical instrument, called also a *semi-circle*, whose use is to observe any angle whose vertex is at the centre of the instrument in any plane, and to find how many degrees it contains.

GRAPNEL, a small anchor fitted with four or five flukes or claws, used to hold boats or small vessels.

GRASS'HOPPER, in entomology, a species of the genus *Gryllus*, to which belong the locust and cricket. The grasshopper of our fields is innocent and harmless.

GRATITUDE, an agreeable emotion, in which good-will to a benefactor forms the ground-work. Gratitude for benefits received cannot be too highly cherished; for it implies a feeling and generous heart, and a proper sense of duty.

GRAV'EL, small stones or pebbles, intermixed with sand. It is supposed to originate from fragments of rocks and flints, worn by the action of the sea, and by their mutual attritions into rounded and other forms. Its red colour is occasioned by the oxyde of iron, and, when found, it affords evidence of a sea-beach having once been on the spot.——*Gravel*, in medicine, a painful disorder, arising from a gritty matter concreting into small stones in the kidneys and bladder.

GRA'VER, in the art of engraving, a tool by which all the lines, scratches, and shades are cut in copper, &c.

GRAVIM'ETER, an instrument for measuring the specific gravities of bodies.

GRAVITA'TION, in physiology, a species of attraction, or the tendency of one body towards another, in consequence of its gravity. Thus, a body elevated above the earth tends to fall, that is, it *gravitates* towards the centre of the earth; and the planets are supposed to gravitate towards the sun, or centre of the solar system. The following remarks on *gravitation*, from Moseley's Illustrations of Science, are so descriptive of its universality, that we cannot resist the temptation of copying them: "Gravitation is fixed in matter eternally and inseparably. No lapse of time wears it away, no modification of circumstances in which it can be placed—no appliance of artificial means—or power of other natural forces upon it, removes or can remove the slightest conceivable portion of it. You may crush the parts of a body into a powder, apply to it the power of heat, and melt it into a liquid—or you may, by a yet intenser application of heat, dilate it into a gas; you may make of it a chemical solution; bring it again to its original form of a solid—analyze it again and again—combine and recombine it; through all these changes you will not in the slightest conceivable degree have affected the gravity or weight of any one of its particles. Not only is the power of gravitating thus unalterably infixed in matter, but it is infixed in it universally. There is no place on the earth's surface where there is matter and not weight—there is no matter known to exist in our system of the universe which does not gravitate; and if we carry on our inquiries beyond the limits of our system, into the fathomless depths of space, we find there the stars gravitating towards one another." The *vis inertiæ*, says Sir Isaac Newton, is a passive principle by which most bodies persist in their motion or rest, receive motion in proportion to the force impressing it, and resist as much as they are resisted. By this principle alone there never could have been any motion in the world; some other principle was necessary for putting bodies into motion; for, from the various compositions of two motions, it is certain that there is not always the same quantity of motion in the world. But by reason of the tenacity of fluids, the attrition of their parts, and the weakness of elasticity in solids, motion is much more apt to be lost than got, and is always upon the decay. There is therefore a necessity of conserving and recruiting it, by active principles; and such is the cause of gravity, by which the planets and comets keep their motion in their orbs, and bodies acquire great motion in falling, &c.

GRAVITY, SPECIFIC, is the relative gravity of any body or substance, considered with regard to some other body, which is assumed as a standard of comparison; and this standard, by universal consent and practice, is rain-water, on account of its being less subject to variation in different circumstances of time, place, &c., than any other body, whether solid or fluid. It happens that a cubic foot of rain water weighs 1000 ounces avoirdupois. Consequently, assuming this as the specific gravity of rain-water, and comparing all other bodies with this, the same numbers that express the specific gravity of bodies, will at the same time denote the weight of a cubic foot of each in avoirdupois ounces, which is a great convenience in numerical computations. From the preceding definition we readily draw the following laws of the specific gravity of bodies, viz. 1. in bodies of equal magnitude, the specific gravities are directly as the weights, or as their densities; 2. in bodies of the same specific gravities, the weights will be as the magni-

CRICKETS AND GRASSHOPPERS REPEAT THEIR CHIRPING NOISE, BY GRATING THEIR SPINY THIGHS AGAINST THEIR HARD WINGS.

THE POWER OF GRAVITY AT TWO MILES FROM THE EARTH, IS FOUR TIMES LESS THAN AT ONE MILE; AND SO GOES ON LESSENING.



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tudes; 3. in bodies of equal weights, the specific gravities are inversely as the magnitudes; 4. the weights of different bodies are to each other in the compound ratio of their magnitudes and specific gravities. Hence, it is obvious, that, of the magnitude, weight, and specific gravity of a body, any two being given, the third may be found; and we may thus find the magnitude of bodies, which are too irregular to admit of the application of the common rules of mensuration; or we may, by knowing the specific gravity and magnitude, find the weight of bodies which are too ponderous to be submitted to the action of the balance or steelyard; or lastly, the magnitude and weight being given, we may ascertain their specific gravities. The most accurate and concise mode of ascertaining the density of liquids, is to employ a small glass measure with a very short, narrow neck, and adjusted to hold exactly 1000 grains of distilled water. The vessel being filled with any other liquid, the weight of it is observed, and thence its relative density to water may be found by merely striking off three decimal places. At each operation the glass must be carefully rinsed with pure water, and again dried, by heating it, and then sucking out the humified air by the help of a sleuder inserted tube. If fluids of various densities, and not disposed to unite in any chemical affinity, be poured into a vessel, they will arrange themselves in horizontal strata, according to their respective densities, the heavier always occupying a lower place.

GRAVITY, Centre of, in mechanics, is a point within a body, through which, if a plane pass, the segments on each side will equiponderate; that is, neither of them can move the other. Hence, if the descent of the centre of gravity be prevented, or if the body be suspended by its centre of gravity, it will continue at rest in equilibrium in any position. The centre of gravity of a parallelogram or cylinder, or any prism whatever, is in the middle point of the axis, and the centre of gravity of a circle or any regular figure, is the same as the centre of magnitude. The common centre of gravity of two bodies is a point so situated in a right line joining the centres of the two bodies, that if the point be suspended, the two bodies will equiponderate and rest. Thus the point of suspension in a balance or steelyard, where the two weights equiponderate, is the common centre of gravity of the two weights.

GRAYLING, in ichthyology, a voracious fish of the genus *Salmo*, larger than a trout, and of a silvery gray colour. It is found in clear rapid streams in the north of Europe, and is much esteemed as food.

GRAYWACKE, in geology, a remarkable kind of rock or stone, composed of grains or fragments of different minerals, chiefly of quartz, felspar, siliceous slate, and argillite. These several ingredients are united by an indurated argillaceous substance, or the interstices between the larger fragments are filled by the same materials which form the larger parts of the rock, but in grains so comminuted as to resemble a homogeneous cement. It is of various colours, generally inclining to some shade of gray or brown.

GREBE, in ornithology, a fowl of the genus *Colymbus* and *Anseres*, of several species.

GREEK CHURCH, that portion of Christians who conform, in their creed, usages, and church government, to the views of Christianity introduced into the former Greek empire, and perfected, since the fifth century, under the patriarchs of Constantinople, Alexandria, Antioch, and Jerusalem. Like the Roman Catholic, this church recognizes two sources of doctrine, the bible and tradition, under which last it comprehends not only those doctrines which were orally delivered by the apostles, but also those which have been approved of by the fathers of the Greek church. It is the only church which holds that the Holy Ghost proceeds from the Father only, thus differing from the Catholic and Protestant churches, which agree in deriving the Holy Ghost from the Father and the Son. Like the Catholic church, it has seven sacraments—baptism, chrism, the eucharist preceded by confession, penance, ordination, marriage, and supreme unction; but it is peculiar in holding that full purification from original sin in baptism requires an immersion three times of the whole body in water, whether infants or adults are to be baptized, and in joining chrism (confirmation) with it as the completion of baptism. It rejects the doctrine of purgatory, has nothing to do with predestination, works of supererogation, indulgences, and dispensations; and it recognizes neither the pope nor any one else as the visible vicar of Christ on earth. In the invocation of the saints, in their fasts, relics, &c. they are as zealous as the Romanists; it may be said, indeed, that the services of the Greek church consist almost entirely of outward forms. This is the religion of Russia; the ecclesiastical establishment of which consists in a holy synod, four metropolitans, eleven arch-bishops, nineteen bishops, 12,500 parish churches, and 425 convents, fifty-eight of which are connected with monastic schools for the education of the clergy. The Greek church, under the Turkish dominion, remained, as far as was possible under such circumstances, faithful to the original constitution. The patriarch of Constantinople exercises the highest ecclesiastical jurisdiction over the Greeks in the whole Turkish empire; but they labour under many disabilities, among which is a heavy poll-tax, under the name of "exemption from beheading."

GREEK FIRE, a combustible composition invented by the Greeks in the middle ages, during their wars with the Arabs and Turks. It consists of naptha, bitumen, sulphur, gum, &c.

GREEK LANGUAGE. The language of the primitive inhabitants of Greece, the Pelasgi, was already extinct in the time of



THE "CHRISM" IS A MYSTERY PECULIAR TO THE GREEK COMMUNION, AND HOLDS THE PLACE OF CONFIRMATION IN THE ROMISH CHURCH.

PETER THE GREAT ABOLISHED THE PATRIARCHAL OFFICE IN THE GREEK CHURCH IN RUSSIA, AND APPOINTED AN EXARCH, WITH LIMITED POWERS.

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THE ATMOSPHERE OF GREECE IS SO DRY, THAT AT EIGHTY-SIX DEGREES, NEARLY THE WHOLE OF THE INSECTS AND VEGETABLES DISAPPEAR.

Herodotus, who asserts that it was different from the Hellenic, and adds, that it is probable the Hellenes have retained their original language. From the great number of Hellenic tribes of the same race, it was to be expected that there would be different dialects, the knowledge of which is the more necessary for becoming acquainted with the Greek language, since the writers of this nation have transmitted the peculiarities of the different dialects in the use of single letters, words, terminations, and expressions, and that not merely to characterise more particularly an individual represented as speaking, but even when they speak in their own person. It is customary to distinguish three leading dialects, according to the three leading branches of the Greeks, the Æolic, the Doric, and the Ionic, to which was afterwards added the mixed Attic dialect. At what time this language first began to be expressed in writing, has long been a subject of doubt. According to the general opinion, Cadmus, the Phœnician, introduced the alphabet into Greece. His alphabet consisted of but sixteen letters; four are said to have been invented by Palamedes in the Trojan war, and four more by Simonides of Ceos. As the Ionians first adopted these letters, and the Athenians received them from them, the alphabet with twenty-four letters is called the *Ionic*. Those who have most carefully studied the subject, believe that the use of the alphabet became common in Greece about 550 years before Christ, and about as long after Homer. In Homer's time, all knowledge, religion, and laws were preserved by memory alone, and for that reason were put in verse, till prose was introduced with the art of writing. The Greek language, as preserved in the writings of the celebrated authors of antiquity, as Homer, Hesiod, Demosthenes, Aristotle, Plato, Xenophon, &c. has a great variety of terms and expressions, suitable to the genius and occasions of a polite and learned people, who had a taste for arts and sciences. In it, proper names are significative; which is the reason that the modern languages borrow so many terms from it. When any new invention, instrument, machine, or the like, is discovered, recourse is generally had to the Greek for a name to it; the facility wherewith words are there compounded, affording such as will be expressive of its use: such are barometer, hygrometer, microscope, telescope, thermometer, &c. But of all sciences medicine most abounds with such terms; as, diaphoretic, diagnosis, diarrhœa, hemorrhage, hydrophobia, pthisis, atrophy, &c.——*Modern Greek*, or *Romaic*. The Greek language seems to have preserved its purity longer than any other known to us; and even long after its purity was lost, the echo of this beautiful tongue served to keep alive something of the spirit of ancient Greece. All the supports of this majestic and refined dialect seemed to fail, when the Greeks were enslaved by the fall of Constantinople (A.D. 1543.) All the cultivated classes who still retained the pure Greek, the language of the Byzantine princes, either perished in the conflict, or took to flight, or courted the favour of their rude conquerors by adopting their dialect. In the lower classes only did the common Greek survive the vulgar dialect of the polished classes. But the Greek spirit, not yet extinguished by all the adversities the nation had undergone, finally revived with increasing vigour, and even the love of song kept alive some sparks of patriotic sentiment. From the beginning of the present century, external circumstances have greatly favoured the progress of education in Greece; schools have been established; and the language itself, which in its degradation was not destitute of melody and flexibility, gained energy and vivacity from the efforts of several patriotic individuals, who endeavoured to bring it nearer the ancient classic dialect. Under the protection of England, during the administration of Mr. Canning, much was done towards the mental improvement of the modern Greeks, and the Greek spirit was gradually developed. An Ionic Greek university was opened at Corfu in 1824. It consists of four faculties, for theology, law, medicine, and philosophy. Its chancellor was lord Guildford. Publications of all kinds have appeared; and effectual means have been taken by scholars of first-rate abilities, to enrich and ennoble the modern Greek language from the classic treasures of their accomplished ancestors.

GREEN'-CLOTH, in British polity, a board or court of justice held in the counting-house of the British monarch's household, and composed of the lord-steward and inferior officers. To this court is committed the charge and supervision of the royal household in matters of justice and government, with power to correct all offenders, and to maintain the peace of the verge, or jurisdiction of the court-royal, which extends every way two hundred yards from the gate of the palace. Without a warrant first obtained from this court, no servant of the household can be arrested for debt.—It takes its name from a green cloth spread over the board at which it is held.

GREEN'-FINCH, in ornithology, a species of *Fringilla*, the feathers of which are of a greenish hue, with the wings and tail variegated with yellow.

GREEN'-HOUSE, or Conservatory, a glazed building, erected for sheltering and preserving the tender exotic plants, which will not bear to be exposed to the open air during the winter season.

GREEN'STONE, in geology, a rock of the trap formation, consisting of hornblend and felspar in the state of grains or small crystals.

GREGA'RIOUS, in natural history, an epithet for such animals as herd together in flocks.

GREGO'RIAN. The *Gregorian year*, in chronology, is a correction of the Julian year. In the latter, every secular or hundredth year is bissextile: in the former every one in four. This reformation, which

AFTER THE OTTOMANS HAD BECOME MASTERS OF GREECE, ALL THE INSTITUTIONS WHICH HAD CONTRIBUTED TO PRESERVE THE LANGUAGE, PERISHED.



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was made by pope Gregory XIII. A.D. 1582, is also called the *New-style*.

GRENA'DE, a hollow shell or globe of iron, filled with combustibles, and thrown out of a howitzer. There is also a smaller kind, thrown by hand, which are called *hand-grenades*. These were originally used by soldiers, who, from long service and distinguished bravery, were selected for the service; and hence the name of *grenadiers*, who now form the first company of a battalion.

GREN'ATITE, a mineral of a dark reddish brown colour, sometimes called prismatic garnet. It occurs imbedded in mica slate, and in talc, and is infusible by the blow-pipe.

GRIF'FIN, in the natural history of the ancients, and in heraldry, an imaginary animal, represented with four legs, wings, and a beak; the upper part representing an eagle, and the lower part a lion. By this form the ancients intended to give an idea of strength and swiftness united, with an extraordinary vigilance in guarding whatever was intrusted to its care. This hybrid animal was supposed to watch over mines of gold and hidden treasures, and was consecrated to the sun.

GRISETTE *(French)*, originally meant a dress of coarse gray cloth, worn by the females of the lower classes; hence it is used for the females themselves. In the language of the theatres, *grisette* signifies an intriguing young girl, of the class of *soubrettes*.

GROAT, a silver coin, first struck in the reign of Edward I., before whose time the English had no silver coin larger than a penny. It has since been used as a money of account equal to fourpence.

GROSS, in commerce, the number of twelve dozen.——*Gross-weight*, the weight of merchandize or goods, with the dross, bag, cask, &c. in which they are contained, for which an allowance is to be made of tare and tret. This being deducted, the remainder of real weight is denominated *neat* or *net* weight.——*Advowson in gross*, in law, an advowson separated from the property of a manor, and annexed to the person of its owner.

GROSS'BEAK, in ornithology, a bird of the genus *Loxia*. It is of a fiery red colour, except round the bill and on the throat, which is black. It is to be met with in North America, and is called the Virginia nightingale, on account of the fineness of its song.

GROSS'ULAR, in mineralogy, a scarce kind of garnet, so named from its green colour.

GROTES'QUE, a word, as applied to painting, sculpture, &c., which denotes irregularity of form and proportions. In its more common acceptation, it means ludicrous, whimsical, extravagant.

GROUND, in painting, the surface on which figures or other objects are represented. In etching, a gumous composition spread over the surface of the metal to be etched, to prevent the nitric acid from eating, except in such places where this ground is opened with the point of a needle. ——In manufactures, the principal colour, to which others are considered as ornamental.——In music, the name given to a composition in which the base, consisting of a few bars of independent notes, is continually repeated to a continually varying melody.——*To gain ground*, to obtain an advantage; to prevail.——*Ground-angling*, fishing without a float, with a piece of lead fixed a few inches from the hook.——*Ground-ash*, a young shoot from the stump of an ash——*Ground-bait*, bait for fish which sinks to the bottom of the water. ——*Ground-floor*, the lower floor, or that which is on the basement.——*Ground-ivy*, in botany, a well known plant, the *Glechoma hederacea*.——*Ground-plates*, in architecture, the outermost pieces of timber lying on or near the ground, framed into one another with mortises and tenons.—— *Ground-plot*, the ground on which a building is placed.——*Ground-rent*, rent paid for the privilege of building on another man's ground, and generally held on a long lease. ——*Ground-tackle*, in ships, the ropes, &c. belonging to anchors.

GROUND'SEL, in botany, a plant of the genus *Senecbio*, of several species.

GROUP, in painting and sculpture, an assemblage of figures or other objects.—— *Grouping* is the art of so combining and balancing the parts as to produce an harmonious effect.

GROUSE, in ornithology, a fowl of the genus *Tetrao*, of which there are several kinds, as, the black game, red game, ptarmigan, white grouse, ruffed grouse, &c. The distinguishing mark of this genus is a naked band, often of a red colour, in place of an eyebrow. They are wild, shy, and almost untameable; dwelling in forests and barren countries, far from man and cultivation.

GROVE, a small wood or cluster of trees with a shaded avenue, or a wood impervious to the rays of the sun.

GRUB, the worm or maggot produced from the beetle, which afterwards becomes a winged insect.

GRUINA'LES, in botany, one of Linnæus's natural orders of plants, containing the geraniums, flax, lignum vitæ, &c.

GRYL'LUS, in entomology, the name of the cricket and locust kind, which, together with the grasshoppers, make only one genus of insects, the characteristics of which are these: the antennæ setaceous; the exterior wings membranaceous and narrow; the thorax compressed and angulated; and the legs formed for leaping.

GRYPHITE, or CROWSTONE, an oblong fossil shell, narrow at the head, which is very hooked, and wider towards the extremity, where it ends in a circular limb.

GUAIAC', or GUAIA'CUM, a resinous substance procured from a tree (the *Guaicum officinale*) growing in the West Indies. It is much used in medicine as a stimulant.

GUA'NA, in zoology, a species of lizard, found in South America.



THE WORD GROTESQUE OWES ITS DERIVATION TO THOSE MONSTROUS FIGURES WHICH FORMERLY ADORNED MONUMENTAL AND SEPULCHRAL GROTTOES.

THE GUAIACUM TREE, OR LIGNUM VITÆ, IS A DARK-LOOKING EVERGREEN, FROM 40 TO 50 FEET IN HEIGHT; THE WOOD HARD AND HEAVY.

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GUAN'ACO, in zoology, the lama, or camel of South America, in a wild state.

GUAN'O, a substance of a dark yellow colour, and of a strong ambrosial smell. It is found in large quantities on the coasts of Peru and other parts of South America, and appears to be the accumulation of the excrements of innumerable flocks of birds. It is such an excellent manure, that it forms an extensive and profitable branch of trade.

GUA'RA, in ornithology, the *Tantalus ruber*, a Brazilian bird, which when first hatched is black, afterwards changes to gray, and then to a bright red colour.

GUAR'ANTOR, one who engages to see that the stipulations of another are performed; also, one who engages to secure another in any right or possession.

GUAR'ANTY, or GUARANTEE', an undertaking or engagement by a third party, that the stipulations of a treaty, or the engagement or promise of another shall be performed.

GUARD, the duty of guarding or defending any post or person from an attack or surprise. Also, the soldiers who do this duty.——*Guard*, in fencing, a posture or action proper to defend the body.——*Vanguard*, in military affairs, a body of troops, either horse or foot, that march before an army or division, to prevent surprise or give notice of danger.——*Rear-guard*, a body of troops that march in the rear, for a like purpose.——*Life-guards*, a body of select troops, whose especial duty is to defend the person of a prince or chief officer.

GUARD'ANT, in heraldry, having the face turned towards the spectator.

GUARD'IAN, in law, a person appointed by will, or otherwise, to superintend the education and property of a minor, to whom the guardian is bound to account, after the child is of age, under responsibility to the Lord Chancellor for the just performance of the trust.

GUARDS, in a particular sense, the troops that are designed to guard the royal person and palace; and which consist both of horse and foot. In Britain, the household troops or guards consist of the life-guards, the royal regiment of horse-guards, and three regiments of foot-guards.——*Yeomen of the Guards*, a band of body-guards instituted by Henry VIII. in the year 1545. Their dress is similar to that of the time of their founder. One hundred are by rotation on duty, and there are seventy more, out of whom the place of any of the hundred who die is supplied.——*National guards*, a military body which has acquired historical importance in the politics of France, originated with the revolution, but underwent many changes both during Napoleon's sway and under the restored Bourbons. It was abolished in April, 1827, for having demanded the removal of Villele's ministry; but was revived at Paris during the popular commotion in July, 1830, which ended in seating Louis Philippe on the throne.——*Guard-ship*, a vessel of war appointed to superintend the marine affairs of a harbour or river, to see that the ships not in commission have their proper watch-word kept duly, by sending her guard-boats round them every night; and to receive seamen who are impressed in time of war.

GUA'VA, in botany, an American tree, and its fruit, of the genus *Psidium*. There are two varieties, the *pyriferum* or white guava, and the *pomiferum* or red guava. The fruit or berry is large and oval-shaped, like the pomegranate, and is of an agreeable flavour.

GUDG'EON, in ichthyology, a small fresh-water fish, of the genus *Cyprinus*.

GUE'BRES, a Persian sect, who still worship fire as an emanation or emblem of the Deity.

GUELFS, or GUELPHS, the name of a family, composing a faction formerly in Italy, whose contests with a rival faction, called the Ghibelines, was the cause of much misery and bloodshed.——The wars of the Guelfs and Ghibelines became the struggle between the spiritual and secular power. The popes, who endeavoured to reduce the German emperors to acknowledge their supremacy, and the cities of Italy, struggling for independence, and deliverance from the oppressive yoke of these same emperors, formed the party of the Guelfs. Those who favoured the emperors were called Ghibelines.——A branch of the Guelf family was in the 11th century transplanted from Italy to Germany, where it became the ruling race of several countries; and the memory of this ancient name has lately been revived by the institution of the Hanoverian Guelfic order.

GUILD, a company, fraternity, or corporation, associated for some commercial purpose: of which every member was to pay something toward the common charge. The ancient guilds were licensed by the king, and governed by laws and orders of their own.

GUILD'HALL, the chief hall of the city of London, for holding courts, and for the meeting of the lord-mayor and commonalty, in order to make laws and ordinances for the welfare and regulation of the city.——*Guild-rents*, are rents paid to the crown by any guild or fraternity: or those that formerly belonged to religious houses, and came to the crown at the general dissolution of monasteries.

GUIL'LOTINE, an instrument of public execution, for beheading persons at one stroke; adopted in France during the period of the Revolution, as affording the least barbarous means of putting criminals to death. The invention of this decapitating machine has been erroneously ascribed to Guillotin, a French physician. It was merely proposed by him, and adopted by the convention, as being less ignominious for the family of the person executed: and the first criminal suffered by it, at the *Place de Grève*, April 25th, 1792. A similar instrument, called *mannara*, was used in Italy for beheading criminals of noble birth: the *maiden*, formerly used in

A GRAND CIVIC BANQUET WAS GIVEN AT GUILDHALL, JUNE 18, 1814, TO THE ALLIED SOVEREIGNS OF RUSSIA, PRUSSIA, AND MANY FOREIGN NOBLES.

ON JULY 9, 1814, A GRAND DINNER WAS GIVEN AT GUILDHALL, BY THE CORPORATION OF LONDON, TO HIS GRACE THE DUKE OF WELLINGTON.



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Scotland, was also constructed on the same principle.

GUIN'EA, an English gold coin, first coined in the reign of Charles II., and till lately current for 21s. It was so called because it was made from the gold that was brought from Guinea, on the coast of Africa.

GUIN'EA-HEN, in ornithology, the *Numida meleagris*, an African fowl domesticated in Europe, which makes a harsh unpleasant cry. Its colour is a dark gray, beautifully variegated with small white spots.

GUIN'EA-PIG, in zoology, a quadruped of the genus *Cavia*, a native of South America, but now domesticated in Europe. It is seven or eight inches long, and of a white colour, variegated with black and light brown spots.

GUITAR', a musical stringed instrument, rather larger than a violin, and played with the fingers. It is much used in Spain and Italy, more especially in the former country, where there are few, even of the labouring class, who do not solace themselves with its practice.

GU'LAUND, in ornithology, an aquatic fowl inhabiting Iceland. In size it is between a goose and a duck, the breast and belly white, and the head of a beautiful green.

GULES, in heraldry, the red colour.

GULF, in geography, a broad capacious bay, which, when very extensive, takes the name of a sea: as the gulf of Venice, also called the Adriatic sea. *A gulf* and *a bay* differ only in extent: we apply *bay* to a large or small recess of the sea, but *gulf* is applied only to a large extent of water.—It also means, a deep cavity in the earth, and a whirlpool.

GULL, a marine fowl of the genus *Larus*, and order of *Anseres*. There are several species.

GUM, a concrete vegetable juice, of no particular smell or taste, becoming viscous or tenacious when dissolved or moistened with water; totally dissoluble into a liquid by water; not dissolving in vinous spirits or oils; burning to a black coal, without melting or catching flame; and suffering no dissipation in the heat of boiling water. The pure gums are such as gum-arabic, tragacanth, senegal, and the gum of cherry and plum-trees.

GUM-AR'ABIC, a gum which flows from the acacia, in Arabia, Egypt, &c. It is very useful both in medicine and the arts.

GUM'-LAC, the produce of an insect which deposits its eggs on the branches of a tree called *bihar*, in Assam, a country bordering on Thibet, and elsewhere in Asia.

GUM'-RESIN, a mixed juice of plants, consisting of resin and an extractive matter, which has been taken for a gummy substance. The most important species are olibanum, galbanum, scammony, gamboge, euphorbium, asafœtida, aloes, myrrh, and gum-ammoniac. Almost all the gum-resins are medicinal substances, and little employed in the arts and manufactures.

GUM-SEN'EGAL, a gum resembling gum-arabic, brought from the country of the river Senegal, in Africa.

GUM-TRAG'ACANTH, the gum of a thorny shrub of that name in Crete, Asia, and Greece. It is employed in calico-printing, and by shoemakers.

GUN, a fire-arm, or weapon of offence, which forcibly discharges a ball, shot, or other offensive matter, through a cylindrical barrel, by means of gunpowder. The larger species of guns are called cannon; and the smaller kinds are called muskets, carbines, fowling-pieces, &c. The gun is supposed to have been used in Asia at a very early date; but it was not invented in Europe before the 14th century. Roger Bacon, about the year 1280, suggested the possibility of applying the preparation since called gunpowder to the purposes of war; but the idea of blowing a body to a distance by its power was produced by its accidentally doing so, in the laboratory of Bartholomew Schwartz, a German monk. Guns were originally made of iron bars, soldered together, and strengthened with iron hoops; an example of which is still preserved in the Tower of London.

GUN'NERY, the science of using artillery against an enemy judiciously, and to the greatest effect. Besides an accurate acquaintance with the management of ordnance of all kinds, the range and force of every kind, the charge and direction necessary for different distances, their materials, the fabrication and effect of gunpowder, &c.; the artillerist must be able to instruct his men in their several exercises, and be thoroughly acquainted with all the tactics necessary in the art of attack and defence: he must be practically skilled in throwing up batteries and other field-works; he must understand mathematics (particularly the doctrine of curves, to calculate the path of the balls); and have some knowledge of mechanics.

GUN'POWDER, a composition of nitre, sulphur, and charcoal, mixed and reduced to fine powder, and usually granulated. It is in the highest degree combustible, and, by means of its elastic force, explodes with great intensity.

GUN'ROOM, in ships, an apartment under the great cabin, where the gunner and his men prepare their cartridges, &c.

GUNTER'S CHAIN, in mensuration, the chain commonly used in measuring or surveying land, so called from Mr. Gunter, the inventor. The chain is 66 feet in length, and is divided into 100 links of 7.92 inches each, consequently an acre of land is equal to 10 square chains.——*Gunter's Line*, a logarithmic line, usually graduated upon scales, sectors, &c.——*Gunter's Quadrant*, the simplest form of a quadrant, provided with two sight-holes, and a string and bob of lead; by which vertical angles may, for ordinary purposes, be determined. The face of the quadrant is also provided with scales and tables, useful in dialling, surveying, &c.

GUN'WALE, or GUN'NEL, the upper-



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most vale of a ship, or that piece of timber which reaches on either side from the quarter deck to the forecastle, being the uppermost bend which finishes the upper works of the hull.

GUR'HOFITE, in mineralogy, a subvariety of magnesian carbonate of lime, found near Gurhoff, in Lower Austria. It is snow-white, and has a dull, slightly conchoidal, or even fracture.

GUR'NARD, in ichthyology, a fish of several species, of the genus *Trigla*. The head is loricated with rough lines, or bony plates, and there are seven rays in the membranes of the gills.

GUSTO, that which excites pleasant sensations in the palate or tongue. Figuratively this word is used for intellectual taste.

GUT, the intestinal canal of an animal. It extends, with many circumvolutions, from the pylorus to the vent; is composed of three coats, and is attached to the body by a membrane called the mesentery. The thin and small parts are called, by anatomists, the *duodenum*, the *ilium*, and the *jejunum*; the large and thick parts are called the *cæcum*, the *colon*, and the *rectum*. By means of this canal, the undigested and unabsorbed parts of food are conveyed from the stomach and discharged.

GUTTA SERENA, a disease in the retina of the eye, which deprives the patient of his sight. Its cause is ascribed to an obstruction of the optic nerve, which may proceed from a palsy in the nerve, from a suppression of usual hæmorrhages, from ulcers healed too soon, or from an epilepsy. Mr. Lawrence, in his Lectures on Surgery, observes, "The term *gutta serena* is, perhaps, nearly synonymous with *amaurosis*; however there is this distinction between them, that *amaurosis* is a general term applied to all affections, whatever may be their degree, of the nervous structure of the eye, while *gutta serena* is rather applied to the complete state of blindness, which arises from the affection of the nerve, when it is fully established."

GUY, in marine language, is a large slack rope, extending from the head of the mainmast to that of the fore-mast, to sustain a tackle for loading or unloading. Also, a rope used to keep a heavy body steady while hoisting or lowering.

GYMNA'SIARCH, in antiquity, the director of the gymnasium. He had two deputies under him; the one called *xystarch*, who presided over the athletæ, and superintended the wrestling, the other, *gymnastes*, who had the direction of all the other exercises.

GYMNA'SIUM, in Grecian antiquity, the name given by the Spartans to the public building where the young men, naked, exercised themselves in leaping, running, throwing the discus and spear, wrestling, &c. They were afterwards very common in all parts of Greece, and imitated, very much augmented and improved, at Rome. They were not single edifices, but a knot of buildings united, being so capacious as to hold many thousands of people at once, and having room enough for philosophers, rhetoricians, and the professors of all other sciences, to read their lectures; and wrestlers, dancers, &c. to exercise at the same time without the least disturbance or interruption. The most renowned gymnasia at Athens were the Lyceum, Academia, and Cynosarges.

GYMNASTICS, the art of performing the several bodily exercises, as wrestling, running, fencing, dancing, &c. Modern gymnastics are intended chiefly for the preservation and promotion of health.

GYMNOSOPHISTS, a sect of Indian philosophers, who went barefooted and scarcely clad, living in the woods and on mountains, and subsisting on the productions of the earth. They never drank wine, and maintained a life of celibacy. They believed in the immortality and transmigration of the soul; and placed the chief happiness of man in a contempt of the goods of fortune, and of the pleasures of sense.

GYMNOSPERM'OUS, in botany, having naked seeds, or seeds not inclosed in a capsule or other vessel.

GYMNO'TUS, the name of an eel, remarkable for its power of affecting the nervous system, in the manner of electricity. This animal and the torpedo, on dissection, appear to have an arrangement of muscular plates not unlike a galvanic trough, and well adapted to produce the effect.

GYNÆ'CEUM, among the ancients, the apartment of the women, a separate room in the inner part of the house, where they employed themselves in spinning, weaving, and needle-work.

GYN'ARCHY, or GYNÆCOC'RACY, government by a woman: or a state where women are legally capable of the supreme command. Of this Great Britain and Spain are familiar examples.

GYNÆCON'OMI, certain magistrates amongst the Athenians, who had an eye upon the conduct of the women, and punished such as forsook the line of propriety and modesty. A list of such as had been fined was put up by them upon a palm-tree in the *Ceramicus*. The *gynæconomi* were ten in number, and differed from the *gynæcosmi*; for the former were inspectors of manners, the latter of dress.

GYNAN'DRIA, the 20th class of the Linnæan system of plants, containing nine orders; Diandria, Triandria, Tetrandria, Pentandria, Hexandria, Octandria, Decandria, Dodecandria, and Polyandria, with the stamens growing on the pistils.

GYPSOPHILA, in botany, a genus of plants, class 10 *Decandria*, order 2 *Digynia*.

GYP'SUM, or PLASTER OF PARIS, sulphate of lime: a mineral not unfrequently found in crystals, often in amorphous masses. There are several varieties; as, the foliated, compact, earthy, granular, snowy, and branchy. The prevailing colour is white, with various shades of gray, blue, red and yellow. When properly calcined



THE ANCIENT GYMNASIUM WAS LITTLE MORE THAN A SCHOOL FOR WARRIORS, MILITARY EXERCISES BEING THOSE WHICH WERE MOST ENCOURAGED.

THE ELECTRIC POWER OF THE GYMNOTUS IS SO GREAT, THAT THE SHOCK SOMETIMES EQUALS THAT WHICH IS PRODUCED BY A VOLTAIC PILE.

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and pulverised, gypsum is mixed with water to the consistence of cream, and poured into moulds by the manufacturers of stucco ornaments and statues, when they are dried in proper stoves. During the consolidation of the plaster, it expands into the finest lines of the mould, so as to give a sharp and faithful impression. The virtues of gypsum in fertilising land have been highly extolled; but, from repeated experiments, and comparative failures, it does not appear to deserve the encomiums it has received.

GYR'FALCON, in ornithology, a species of *Falco* or hawk.

GYRI'NUS, the water-flea, a genus of insects of the order *coleoptera*. They are found on the surface of waters, on which they run with incredible velocity; and when attempted to be taken, they plunge to the bottom, drawing after them a bubble very similar to a globule of quicksilver. The *Gyrinus natator* is the only European species: this has a surface so bright as to shine like a mirror in the sun. The larva is of a very singular shape, having a lengthened body furnished with many lateral appendages down the body; and is a highly curious object for the microscope. When its change arrives it forms for itself a small oval cell or case on a leaf of some water plant, and after casting its skin it becomes a chrysalis: these insects, like other beetles, fly only by night.

GYR'OMANCY, a kind of divination performed by walking round in a circle or ring.

GYVES, the name given to fetters or shackles for the legs.

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# H.

H, the eighth letter and sixth consonant of the English alphabet. It is not strictly a vowel, nor an articulation; but the mark of a stronger breathing than that which precedes the utterance of any other letter. It is pronounced with a strong expiration of the breath between the lips, closing, as it were, by a gentle motion of the lower jaw to the upper, and the tongue nearly approaching the palate. H is sometimes mute, as in *honour, honest*; also when united with *g*, as in *right, fight, brought*. In *which, what*, and some other words where it follows *w*, it is sounded before it, *hwich, hwat*, &c. H, among the Greeks, as a numeral, signified 8; in the Latin of the middle ages, 200, and with a dash over it, 200,000.——In music, *h* is the seventh degree in the diatonic scale, and the twelfth in the chromatic.

HA'BEAS-COR'PUS, in law, a writ for delivering a person from false imprisonment, or for removing a person from one court to another. It is accordingly considered as the glory of British jurisprudence, and the bulwark of personal freedom. By the action of this writ, of which there are several kinds, adapted to different occasions, relief from all unjust imprisonment may be obtained, causes removed from one court to another for the promotion of justice, and prosecutors compelled to bring the prosecuted to open trial, instead of prolonging his imprisonment. Thus it not only protects the citizen from unlawful imprisonment at the suggestion of the civil officers of the government, but also against groundless arrests at the suit or instigation of individuals. The right is, however, liable to be suspended; it being sometimes necessary to clothe the executive with an extraordinary power, as the Romans were in the habit of choosing a dictator in emergencies, when the public was in danger. In peaceable times a considerable degree of liberty may be left in the hands of the people, but in troublesome ones the executive power should have every possible strength; and, in conformity with these experimental truths, the British parliament may, in the hour of danger, by temporary suspension of every opposing statute, confide even absolute control in the hands of the administration, without permanently giving up one iota of freedom.

HAB'ERGEON, a coat of mail formerly worn to defend the neck and breast. It was formed of little iron rings united, and descended from the neck to the middle of the body.

HABEN'DUM, in law, a word of form in a deed or conveyance, which must consist of two parts, viz. the *premises* and the *habendum* (to have and to hold).

HAB'IT, in philosophy, an aptitude or disposition either of mind or body, acquired by a frequent repetition of the same act: thus virtue is called a habit of the mind; strength, a habit of the body. All natural habits, whether of body or mind, are no other than the body and mind themselves considered as either acting or suffering; or they are modes of the body or mind wherein either perseveres till effaced by some contrary mode.——*Habit*, in medicine, denotes the settled constitution of the body; or a particular state formed by nature, or induced by extraneous circumstances.

HADÉ, in mining, a term used to denote the inclination, or deviation from the vertical, of any mineral vein. Also the steep descent of a shaft.

HAD'DOCK, a fish of the cod kind, which inhabits the northern coast. It has a long body, the upper part of a dusky brown colour, and the belly of a silvery hue.

HAD'LEY'S QUAD'RANT, a quadrant



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that is particularly used for taking altitudes at sea.

H.EMATITES, or BLOOD-STONE, in natural history, an extremely rich and fine iron ore. It is very ponderous, and is either of a pale red, a deeper red, or a bluish colour; usually of a very glossy surface; and when broken, of a fine and regularly striated texture: the striæ converging towards the centre of the body, and the masses naturally breaking into fragments of a broad base and pointed end, appearing something pyramidal.

H.EMATOCELE, in medicine, a hernia from extravasation of blood.

H.EM'ORRHAGE, a flux of blood from any part of the body, proceeding from the rupture of a blood-vessel, or some other cause. The principal causes of hæmorrhages are plethora, violent commotions of the body, hot foods and liquors, heat of the season, and a sudden cooling of the body after violent heat and passion.

H.EM'ORRHOIDS, in medicine, a discharge of blood from the hæmorrhoidal veins; the piles.

HAGIOG'RAPHY, sacred writings. The Jews divide the books of the Scriptures into three parts; the Law, which is contained in the first five books of the Old Testament; the Prophets, or Nevim; and the Cetuvim, or *writings*, by way of eminence. The latter class is called by the Greeks *Hagiographa*, comprehending the books of Psalms, Proverbs, Job, Daniel, Ezra, Nehemia, Ruth, Esther, Chronicles, Canticles, Lamentations, and Ecclesiastes.

HAIL, in meteorology, globules of ice, or vapour more intensely frozen than when it appears in the form of snow, and falling from the clouds in showers and storms. It is supposed to be formed in the higher regions of the atmosphere, where the cold is extreme, and where the electric matter is very copious. In these circumstances, a great number of particles of water are brought near together, where they are frozen, and in their descent collect other particles, so that the density of the substance of the hail-stone grows less and less from the centre; this being formed first in the higher regions, and the surface being collected in the lower. Hailstones assume various figures; some are round, others angular, others pyramidical, others flat, and sometimes they are stellated with six radii, like crystals of snow. They sometimes fall with a velocity of seventy feet in a second, or about fifty miles an hour: their great momentum, arising from this velocity, renders them very destructive, particularly in hot climates. Showers of ice and freezing rain are related to have fallen in different countries. In August, 1828, there was a fall of solid ice at Horsley in Staffordshire: some of the pieces were three inches long by one inch broad, and others were about three inches in circumference, and quite solid. A recent traveller in North America relates, that twelve years since, it rained and froze as it fell for two days; the trees, ships, and buildings were encrusted with icicles; the strongest branches of the trees fell almost every minute beneath the icy loads. Mr. Faux says, in March, 1820, at Newcastle, Delaware State, "I saw the effect of the late freezing rain on the trees, which, over an extent of country six times as large as England, has despoiled trees as completely as if chain shot had passed through them all. The trees and shrubs are laden with ice—a weight ten times that of their own boughs. Many farmers lost nearly all their timber and orchards; a ship was also upset by the great weight of the ice cohering to the rigging." The phenomena attending the formation and fall of hail are not well understood; but it is certain they are connected with electricity.

HAIR, in physiology, slender, oblong, and flexible filaments, growing out of the pores of animals, and serving most of them as a covering. It consists of the bulb, situated under the skin, which is a nervous vesicle, and a trunk which perforates the skin and cuticle, and is covered with a peculiar vagina or sheath. The colour of human hair depends on the medullary juice; but there are also general differences of it, peculiar in some degree to the climates. In the hottest countries it is very black; in the colder, it is yellowish, brown, or inclining to red; but in all places it grows grey or white with age. In quadrupeds, it is of the most various conformation, from the finest wool to the bristles of a hog. The principal constituent parts of hair are animal matter, oil, silex, sulphur, carbonate of lime, &c.—The Roman youth before the age of puberty wore their hair in ringlets upon their shoulders; but about the time of putting on the *toga virilis*, they cut it short; such of them, at least, as wished to distinguish themselves from the maccaronies and effeminate coxcombs. The hair thus cut off was consecrated to Apollo, who is always represented with flowing hair, or to some other god, under whose protection they supposed themselves to be more immediately placed.——*Hair*, in botany, the down, or hair-like threads on the surface of plants.

HAIR PENCILS, in painting, are composed of very fine hairs, as of the minever, the marten, the badger, the polecat, &c., which are mounted in a quill when they are small or of moderate size, but when larger than a quill they are mounted in white-iron tubes. The most essential quality of a good pencil is to form a fine point, so that all the hairs may be united when they are moistened by drawing them through the lips.

HAIR'SBREADTH, a measure of length, equal to the forty-eighth part of an inch.

HAL'BERD, or HAL'BERT, a weapon something like a spear, formerly carried by the serjeants of foot and artillery.

HAL'CYON, in ornithology, a name given by the ancients to the *alcedo*, or kingfisher; a bird that was said to lay her eggs in nests, on rocks near the sea, during the calm weather, about the winter solstice. ——*Halcyon-days*, in antiquity, seven days before, and as many after the winter solstice.



ON THE TOPS OF MOUNTAINS HAILSTONES ARE VERY SMALL, AND CONTINUALLY INCREASE IN BULK TILL THEY REACH THE LOWER GROUNDS.

IN SPRING AND SUMMER, HAIL HAS A CHILLING EFFECT ON VEGETATION, BESIDES INJURING THE TENDER PLANTS BY ITS VIOLENCE.

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HALF-BLOOD, in law, relationship by the father's or the mother's side only.

HALF-MOON, in fortification, an outwork composed of two faces, forming a salient angle, whose gorge is in the form of a crescent or half-moon.

HAL'IBUT, in ichthyology, a fish of the genus *Pleuronectes*. It has a compressed body, one side resembling the back, the other the belly; swims on its side; and both eyes are on the same side of the head. It grows to a great size, sometimes weighing from three to four hundred pounds, and forms an article of food.

HALIO'TIS, the EAR-SHELL, in conchology, a simple shell without any hinge, and formed all of one piece, of a depressed figure, very angular at the mouth, having an approach to the spiral form at the summit, and having several perforations on the lateral part of the disk.

HALLELU'IAH, a word signifying *praise the Lord*, or *praise ye Jehovah*. It is met with in the beginning of some Psalms, and the end of others. It is a word of such liquid fluency and harmonious softness, that it is retained in our hymns without translation. In conformity with the German and other continental languages, in which *j* has the sound of *y*, we often see it written *Hallelujah*; but to pronounce the word with the English sound of *j* destroys its beauty, and it ought never to be so written.

HAL'LIARD, a rope or tackle for hoisting or lowering a sail.

HALLUCINATION, in medicine, *(dysaesthesia)*, erroneous imagination. *Hallucinations of the senses* arise from some defect in the organs of sense, or from some unusual circumstances attending the object; and they are sometimes symptoms of general disease, as in fevers. *Maniacal hallucinations* arise from some imaginary or mistaken idea.

HA'LO, in physiology, a luminous ring or circle, sometimes white and sometimes coloured, appearing round the body of the sun, moon, or stars; whose light, passing through an intervening cloud, gives rise to the phenomenon. It is generally believed that both solar and lunar haloes are heralds of succeeding changes of weather from dry to moist; as rain generally follows in periods of from four to twenty-four hours after each manifestation, according to the brilliancy of its appearance, and the perfection of the halo, particularly if the wind be S. or S. W. And that these indications generally precede the indications of the barometer, may be accounted for thus:—As the lower stratum of the atmosphere becomes condensed (from contrary currents or other causes), it is better qualified to concentrate by reflection the rays of the sun or moon: and hence a halo is formed before the atmospheric pressure is sufficient to act upon the barometer. Lunar haloes are more easily discovered than solar haloes, because the lunar rays are more feeble than the solar; but solar haloes may be readily discovered, if observers would accustom themselves to look steadily within a few degrees of the sun, when he has risen from 10° to 30°; and also when he has about the same altitude in the evening (as solar haloes are of very rare occurrence at mid-day), when they perceive he shines faintly, and there is no appearance of cloud.

HAL'OGENE, in chemistry, those substances which form compounds of a saline nature, by their union with metals, as *chlorine, iodine*, &c.

HAM'ADRYAD, in the heathen mythology, a wood-nymph, feigned to live and die with the tree to which it was attached.

HAM'MOCK, in naval affairs, a piece of hempen cloth, six feet long, and three feet wide, gathered together at the two ends by means of a clew, and slung horizontally under the deck, forming a receptacle for a bed. In preparing for battle, the hammocks, with their contents, are all firmly corded, taken upon deck, and fixed in various nettings so as to form a barricade against small shot.

HAM'SOKEN, in old law-books, signifies the liberty or privilege a man enjoys in his own house. It is also said to signify a franchise granted to lords of manors, by which they hold pleas, and take cognisance of the breach of that immunity.

HAM'STER, in zoology, a species of rat, the *Mus ericetus*, or German marmot. It is of the size of a water-rat, and is remarkable for two bags on each side of the jaw, under the skin, in which it conveys food to its winter residence.

HAN'APER, an office in chancery, under the direction of a master, whose clerk receives all fines due to the crown for seals of charters, patents, commissions, and writs. It is supposed he formerly deposited the money so taken in a kind of basket, or *hamper*. There is also an officer who is controller of the *hanaper*. This word therefore answered to the modern exchequer.

HAND, in anatomy, an important member of the human body, which, from the facilities it affords in all operations, and accuracy in ascertaining the magnitude, &c. of extraneous objects, is justly considered as contributing very essentially to all that is either ingenious or scientific in the human character. It consists of the *carpus*, or wrist; the *metacarpus*, or the four bones within the palm, and the fingers.——*Hand*, in the manege, a measure of four inches, by which the height of a horse is computed; Also the parts of a horse; as the *forehand*, for the head, neck, and fore-quarters; the *hind-hand*, which includes the rest. It also denotes the horseman's hand; as, the *spur-hand*, which is his right hand; and the *bridle-hand*, which is his left hand.——*Hand*, in heraldry, is termed either *dexter* (right), or *sinister* (left); and, when borne in the escutcheon, is supposed to signify power, equity, fidelity, and friendship.——The word *hand* is also used in a great variety of senses, far too numerous for insertion here, both literally and figuratively.

HAND'SPIKE, a strong wooden bar,



THE GREAT SUPERIORITY OF THE HUMAN HAND OVER THAT OF THE APE, ARISES FROM THE SIZE AND STRENGTH OF THE THUMB.

THE HUMAN HAND IS SUPPOSED TO BE THE MOST EXTENSIVE AND PERFECT ORGAN OF TOUCH POSSESSED BY ANY ANIMAL.

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used as a lever to move the windlass and capstan in heaving up the anchor, or raising any weight on board a ship.

HANSEAT'IC, pertaining to the Hanse towns, or to their confederacy. The Hanse towns in Germany were certain commercial cities which associated for the protection of commerce as early as the 12th century. To this confederacy acceded certain commercial cities in Holland, England, France, Spain, and Italy, until they amounted to seventy-two, which for centuries commanded the respect and defied the power of kings. From the middle of the 15th century, the power of the confederacy, though still very formidable, began to decline. This, however, was not owing to any misconduct on the part of its leaders, but to the progress of that improvement it had done so much to promote. The civilization, which had been at first confined to the cities, gradually extended over the contiguous country; and feudal anarchy was everywhere superseded by a system of subordination and the progress of the arts. At present it only consists of the cities of Hamburgh, Lubeck, and Bremen; and they, indeed, possess merely the shadow of their former state.

HAP'PINESS, the agreeable sensations which spring from the enjoyment of good. It consists in the possession not only of the goods of the body, as health, strength, &c. but also of the more refined goods of the mind, as knowledge, memory, taste, and especially the moral virtues, magnanimity, fortitude, benevolence, &c. That state is mostly to be sought after, in which the fewest competitions and disappointments can happen, which least of all impairs any sense of pleasure, and opens an unexpected source of the most refined and lasting enjoyments. That state which is attended with all those advantages, is a state or course of virtue: therefore, a state of virtue, in which the moral goods of the mind are attained, is the happiest state; and he only can be esteemed really and permanently happy, who enjoys peace of mind in the favour of the Almighty.

HARAN'GUE, a popular oration, generally implying loudness or declamation; and not a deliberate and argumentative address or discourse.

HAR'BOUR, a port, haven, or inlet of the sea, in which ships can moor, and be sheltered from the fury of winds and a heavy sea.

HARD-A-LEE, in seaman's language, an order to put the helm close to the lee side of the ship, to tack or keep her head to the wind.——*Hard-a-weather*, an order to put the helm close to the weather or windward side of the ship.——*Hard-a-port*, an order to put the helm close to the larboard side.——*Hard-a-starboard*, an order to put the helm close to the starboard side.

HARD'NESS, in physiology, that quality in bodies whereby their parts cohere firmly together, so as not to give way to any external impulse, nor yield inwards, without breaking. A body, says M. Hauy, is considered more hard in proportion as it presents greater resistance to the friction of another hard body, such as a steel file; or as it is more capable of wearing or working into such other body, to which it may be applied by friction.

HARD'WARE, instruments and utensils of every kind manufactured from metals, comprising iron, brass, steel, and copper articles of all descriptions. Birmingham and Sheffield are the principal seats of the British hardware manufactures; and from these immense quantities of knives, razors, scissars, fire-arms, gilt and plated goods, &c. are supplied to an extent almost incredible. The estimate formed by Mr. M'Culloch is that the total aggregate value of the iron and other hardware manufactures of England and Scotland cannot be reckoned at less than 17,500,000*l.* a year; affording direct employment, in the various departments of the trade, for at least 360,000 persons.

HARE, in zoology, *Lepus timidus*, a timorous animal of exquisite sight and hearing, with long ears, large eyes, a short tail, and a divided upper lip. It is a beast of chace, and is sometimes pursued by greyhounds in open ground, which is called coursing; and sometimes by harriers or hare hounds, which is called hare hunting. It subsists on a great variety of vegetables, particularly those which possess milky qualities; the bark of young trees, and their tender shoots are likewise often taken by them for food. It produces generally three young ones at a time, and breeds at least three times in a year. The hare seldom quits its seat, or *form*, as it is called, during the day, unless compelled by the approach of enemies; but takes its range for food and excursion by night, always returning, it is said, to her habitation, by the same track by which it was left. In this form it will sometimes suffer itself to be approached so nearly, as almost to be trodden upon before it starts for escape; the first advances of the enemy having probably not attracted its attention, and those which immediately followed being attended by a species of fascination, or prostration of energy, the frequent effect of terror; but at length the imminence of its danger rouses every nerve and muscle to exertions which enable it to leave its enemies at a considerable distance. Its fleetness is such as to give it the advantage over many of its numerous adversaries. Its quickness of hearing, and comprehension of sight, by which last it receives the impression of objects on almost every side, are also important means of its protection.

HA'REBELL, in botany, a plant of the genus *Hyacinthus*, with campaniform or bell-shaped flowers.

HA'RE'S-EAR, in botany, a plant of the genus *Bupleurum*.

HA'RELIP, a single or double fissure of the upper lip, by which it is divided into two or three parts, and thus resembles the lip of the hare. It is a great deformity, but, fortunately, is easily curable by undergoing certain surgical operations.



THOUGH THE PRESENCE OF IMAGINARY GOOD CANNOT MAKE US HAPPY, THE ABSENCE OF IT MAY MAKE US MISERABLE.

THERE IS AN INTERMEDIATE STATE BETWIXT HARDNESS AND FLUIDITY, IN WHICH BODIES ARE MADE TO YIELD TO A CERTAIN FORCE.

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MUSICAL GLASSES ARE OF GERMAN ORIGIN, BUT WERE REVIVED BY DR. FRANKLIN, AND BROUGHT TO GREAT PERFECTION BY THE MESSRS. CADWRIGHT.

HA'REM, the apartments in which Mussulman princes confine their women, who are prohibited from the society of others. They are waited on by female slaves, and guarded by black eunuchs: the head of the latter is called *Kizlar-aga*. There are two kizlar-agas, one of the old, the other of the new palace, each of which has its harem. The one is occupied by the women of former sultans, and those who have incurred the displeasure of the reigning prince; the other by such as still enjoy his favour. The lady who first presents him with a male heir, is styled the *sultana*, by way of eminence. She must then retire into the old palace; but if her son ascends the throne, she returns to the new palace, and has the title of *sultana valide*. She is the only woman who is allowed to appear without a veil; none of the others, even when sick, are permitted to lay aside the veil, in the presence of any one except the sultan. When visited by the physician, their bed is covered with a thick counterpane, and the pulse felt through gauze. The life of the ladies of the imperial harem is spent in bathing, dressing, walking in the gardens, witnessing the voluptuous dances performed by their slaves, &c. The women of other Turks enjoy the society of their friends at the baths, or at each other's houses, appear in public accompanied by slaves and eunuchs, and enjoy a degree of liberty which increases as they descend in rank. But those of the sultan have none of these privileges. It is, of course, only the richer Moslems who can maintain harems: the poorer classes have generally but one wife.

HARICOT, a kind of ragout of meats and roots.

HARLEQUIN, the principal character in pantomime, clad in a party-coloured dress, with a half-mask, and who is perpetually dancing, leaping, or performing tricks with his wonder-working wand. This character was first introduced into Italian comedy, where he united extravagant buffoonery with great corporeal agility.

HARMATTAN, the name given to a prevailing wind on the coast of Africa, which is of a peculiarly dry and parching character.

HARMONICA, or ARMONICA, a musical instrument, in which the sound is produced from glasses, blown as near as possible in the form of hemispheres, having each an open neck or socket in the middle. The diameter of the largest glass is nine inches, and that of the smallest three inches. Between these there are twenty-three different sizes, differing from each other a quarter of an inch in diameter. The largest glass in the instrument is G, including three complete octaves; and they are distinguished by painting the apparent parts of the glasses within side, every semitone white, and the other notes of the octave with the seven prismatic colours; so that glasses of the same colour, (the white excepted) are always octaves to each other. The method of extracting exquisite tones, by rubbing the finger on the brim of drinking-glasses, filled with water in different proportions, was an old discovery; but it remained for Dr. Franklin to construct the *harmonica*. "The advantages of this instrument," says Dr. Franklin, "are, that its tones are incomparably sweet beyond any other; that they may be swelled and softened at pleasure, by stronger or weaker pressures of the finger, and continued to any length; and that the instrument, once well tuned, never again wants tuning." Its disadvantages are, the difficulty of adjusting the tones by grinding; the extreme skilfulness necessary in the player; and the impracticability of performing upon it many of the ordinary operations of the musical art; for however much it excels all others in the delicacy and duration of its tones, yet it is confined to those of a soft and plaintive character, and to slow solemn movements.

HARMONICS, that branch of music which considers the differences and proportions of sound.

HARMONY, in music, the agreeable result or union of several musical sounds heard at one and the same time. *Natural harmony* consists of the harmonic triad or common chord. *Artificial harmony* is a mixture of concords and discords. *Figured harmony* is that in which, for the purpose of melody, one or more of the parts of a composition move, during the continuance of a chord, through certain notes which do not form any of the constituent parts of that chord. —— *Harmony*, as applied to nature, the necessary reciprocal accordance of causes and effects, by which the existence of one thing is dependent on that of another.—In matters of literature, we use the word *harmony* for a certain agreement between the several parts of the discourse. In architecture, *harmony* denotes an agreeable relation between the parts of a building. In painting, it signifies the union or connection between the figures, with respect to the subject of the piece; and also denotes the union or agreeable mixture of different colours.——*Harmony of the spheres*, a favourite hypothesis of Pythagoras and many other ancient philosophers, according to which, celestial music, imperceptible by the ears of mortals, was supposed to be produced by the sweetly tuned motions of the stars and planets. This harmony they attributed to the various proportionate impressions of the heavenly globes upon one another, acting at proper intervals.

HARMONICAL PROPORTION, in arithmetic and algebra, is that in which the first term is to the third, as the difference of the first and second is to the difference of the second and third: thus 2, 3, 6, are in harmonical proportion, because 2 : 6 : : 1 : 3. In four terms the 1st is to the 4th as the difference of the 1st and 2nd is to the difference of the 3rd and 4th: that is 9, 12, 16, 24, are in harmonical proportion because 9 : 24 : : 3 : 8. "To find an harmonical mean proportion between two terms:" Divide double their product by their sum. "To find a 3rd term in har-

"BUSK INFINITE WISDOM MUST ACCOMPLISH ALL ITS WORKS WITH CONSUMMATE HARMONY, PROPORTION, AND REGULARITY."—CHEYNE.



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monical proportion to two given terms:" Divide their product by the difference between double the 1st term and the 2nd term. "To find a 4th term in harmonical proportion to three terms given:" Divide the product of the 1st and 3rd term by the difference between double of the 1st and the 2nd term.

HAR'MOST, in Grecian History, a Spartan governor, regulator or prefect.

HAR'MOTOME, in mineralogy, a curious substance, called also *Cross-stone*, on account of the cruciform figure of its crystals, and the peculiarity of its composition. It chiefly occurs in metalliferous veins; its prevailing colour is white; it is translucent or semi-transparent, and hard enough to scratch glass.

HARP, a musical stringed instrument, of a triangular figure. It stands erect, and, when used, is placed at the feet of the performer, who produces its tones by the action of the thumb and fingers of both hands on the strings. Its origin is very variously ascribed; but whatever it may have been, its invention is manifestly very ancient; for it appears to have been in use (under various forms) with the Egyptians, Hebrews, Greeks, and Romans. The Anglo-Saxons excelled in playing on the harp. The Irish, Scots, and Welsh also made much use of this instrument; and with the Anglo-Normans it was equally popular. By the Welsh laws, a harp was one of the things that were necessary to characterize a freeman or gentleman; and none could pretend to this rank, who had not a harp, and was not able to play upon it. By the same laws, to prevent slaves from pretending to be gentlemen, it was expresly forbidden to teach, or to permit, them to play upon the harp; and none but the king, the king's musicians, and gentlemen, were allowed to have harps in their possession. The modern harp forms one of the most elegant objects to the eye, while it produces some of the most agreeable effects to the ear, of any instrument in use. There are generally 35 strings, but sometimes the number is extended to 43; and the compass usually extends from double A of the bass clef, to double G in the G clef.

HAR'PIES, in mythology, three rapacious winged monsters, supposed to be the goddesses of storms, and called Aello, Ocypete, and Celœno. They are so differently described by the poets, that it is difficult to say any thing definite concerning them. Hesiod represents them as young virgins, of great beauty; Vossius supposes them to be three winds; but both poets and artists appear generally to vie with each other in depicting them under the most hideous forms.

HARPOON', an iron instrument, formed at one end like a barbed arrow, and having a rope at the other, for the purpose of spearing the whale. As soon as the boat has been rowed within a competent distance of the whale, the harpooner launches his instrument; and the fish being wounded, immediately descends under the ice with amazing rapidity, carrying the, harpoon along with him, and a considerable length of the line, which is purposely let down, to give him room to dive. Being soon exhausted with the fatigue and loss of blood, he re-ascends, in order to breathe, where he presently expires, and floats upon the surface of the water.——*Harpoon Gun*, an instrument for discharging harpoons at whales in preference to the common method of the hand. It consists of a kind of swivel, having a barrel of wrought iron, about two feet long, and is furnished with two locks, which act simultaneously, for the purpose of diminishing the liability of the gun missing fire.

HARP'SICHORD, a musical instrument with strings of wire, played on by means of keys, the striking of which moves certain little jacks, which also move a double row of chords or strings, stretched over four bridges on the table of the instrument. Since the invention of that superior instrument, the grand piano-forte, the use of the harpsichord is greatly diminished.

HAR'RIER, a small hound, with an acute sense of smelling, kept for hunting hares.

HAR'ROW, the name of a very useful instrument of agriculture, employed to prepare ploughed land for the seed, and to mix the seed with the soil after it has been sown.

HARTS'HORN, the horns of the common male deer, to which very extraordinary medicinal virtues were once ascribed, but which the experience of late years has considerably lessened. The articles denominated *spirit of hartshorn* and *salt of hartshorn*, though formerly obtained from the horns of different species of deer, are now chiefly prepared from bones. The former of these, which is a volatile alkali of a very penetrating nature, is an efficacious remedy in nervous complaints and fainting-fits; and salt of hartshorn has been successfully prescribed in fevers. The scrapings or raspings of the horns, under the name of *hartshorn shavings*, are variously employed in medicine. Boiled in water, the horns of deer give out an emollient jelly, which is said to be remarkably nutritive. The jelly of hartshorn is simply gelatine; the earth remaining after calcination, is phosphate of lime; the salt and spirit of hartshorn are muriate of ammonia, with a little animal oil.

HAR'USPICE, in Roman history, a person who pretended to foretel future events by inspecting the entrails of beasts sacrificed, or watching the circumstances attending their slaughter, or their manner of burning and the ascent of the smoke.

HAR'VEST MOON, an epithet applied to those moons which, in the autumnal months, rise on successive nights, soon after sunset, owing to the oblique ascension of the signs of the Zodiac, through which the moon is then passing.

HASTA'TI, among the Romans, were soldiers armed with spears, who were always drawn up in the first line of battle. These were picked out the next in age to





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THE OSTRICH, CONTRARY TO THE COMMON OPINION, SITS UPON ITS EGGS, THE MALE IN COMPANY WITH SEVERAL FEMALES, DAY AND NIGHT.

BIRDS HATCH THEIR EGGS BY THE WARMTH OF THEIR BODY; FISHES, INSECTS, REPTILES, AND WORMS EXPOSE THEM TO THE SUN'S HEAT.

the *relites*. At last they laid aside the spear, but still retained their name.

HATCH'EL, or HAC'KLE, a tool with which flax and hemp are dressed. It consists of long iron teeth, regularly set in a piece of board, being, in fact, a large kind of comb or card.

HATCH'ETINE, in mineralogy, a substance of the consistence of soft tallow, of a yellowish white or greenish-yellow colour, found in South Wales.

HATCH'ING, the maturation of the eggs of birds, and production of the young ones alive. This is accomplished either by the natural warmth of the body of the parent bird, or by artificial heat. [See INCUBATION.]

HATCH'MENT, or FUNERAL ACHIEVEMENT, in heraldry, an armorial escutcheon, usually placed over the door of a person of distinction, deceased, and which points out the sex, conjugal connexion, and dignity of the person. These circumstances are denoted by the form and accompaniments of the field, and the *colour of the ground* of the hatchment: thus, "For a bachelor,"—the paternal arms are painted upon a shield, and accompanied with helmet, crest, and motto, and with the ground of hatchment (namely, the vacant canvass on each side of the shield) all black. "For a single woman,"—the paternal arms are painted upon a lozenge, with no other accompaniment, or ornament, than a gold-cord, loosely knotted, encompassing the field: the ground, in this case, is also all black. "For a widow,"—the paternal arms of the defunct are impaled with those of her late husband, in a lozenge, with a fancy gold-ornament round it; but with no accompaniment; the ground all black. "For a married woman leaving a husband,"—her paternal arms impaled with those of her husband, are painted upon a shield, without the armorial accompaniment; the sides of the shield being only ornamented. In this case the sinister side of the ground is black, to denote the death of the wife; the dexter side white, to show that the husband is living. "For a married man leaving a widow,"—the arms as before, upon a shield, with the accompaniments of helmet, crest, and motto: the dexter side of the ground, in this case, being black; the sinister, white. "For a man who dies, leaving a second wife,"—his shield of arms (not impaled) together with the accompaniments, are painted upon a black ground. On the dexter side of the shield is placed a small funeral escutcheon, bearing his paternal coat impaled with that of his first wife, the sinister side of this escutcheon being black, to denote her death; and on the sinister side of the shield is placed another escutcheon, bearing his arms impaled with those of his second wife; the dexter side of this escutcheon, being painted black, to denote his death; the sinister, white, to show that his second wife is still living. "The peer," is distinguished by his coronet and supporters; "the baronet," by his badge; "the knight companion," by the motto of his order; and "the bishop," by his mitre. In this case it is observable, that as, by the rules of heraldry, the arms of the office take precedency of those of the holder, the arms of the diocese are always impaled on the dexter side, those of the bishop on the sinister side, of the escutcheon: consequently on the hatchment for a bishop the sinister (and not the dexter) side of the ground is painted black.

HATCH'WAY, in ships, a square or oblong opening in the deck, affording a passage from one deck to another, or into the hold or lower apartments.

HATTI-SHERIFF, in Turkish polity, an order which comes immediately from the Grand Signior, who subscribes it usually with these words:—"Let my order be executed according to its form and import." These words are generally edged with gold, or otherwise ornamented; and an order given in this way is irrevocable.

HAU'TBOY, a musical wind instrument, shaped somewhat like the flute, but spreading and widening at the bottom, and sounded through a reed.

HAV'ERSACK, a kind of bag of strong coarse linen, to carry bread and provisions on a march.

HAW'FINCH, in ornithology, a species of *Loxia*, which feeds on haws and cherries.

HAWK, a bird of prey of the eagle and falcon tribe, the two principal species of which are the sparrowhawk and the goshawk, both used formerly in falconry. Most of the species are rapacious, feeding on birds and small animals.

HAWK'ING, the exercise of taking wild-fowl by means of hawks, usually called falconry. In olden times, persons of high rank rarely appeared without their dogs and their hawks; the latter they carried with them when they journeyed from one country to another; and sometimes even when they went to battle, and would not part with them even to procure their own liberty when taken prisoners. These birds were considered as ensigns of nobility; and no action could be reckoned more dishonourable to a man of rank, than to give up his hawk. Upon the tapestry of Bayeaux, Harold is represented approaching the duke of Normandy, with his hawk upon his hand. Sometimes hawks formed part of the train of an ecclesiastic: Becket had hawks and hounds of every description with him, when he went to the court of France, as ambassador from England. Females of distinction were, occasionally represented with hawks on their hands, as we know, from an ancient sculpture, in the church of Milton-Abbey, where the consort of King Athelstan appears, with a falcon on her hand, tearing a bird. The Welsh had a saying in very early times, that "you may know a gentleman by his hawk, horse, and greyhound." Alfred the Great is said to have written a treatise on hawking; and from various sources the pastime may be traced in high favour, to the end of the Saxon era.——*Hawking*, in trade, the going



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about with commodities to sell, after the manner of a hawker.

HAUYNE, a mineral so named in honour of the celebrated abbé Hauy. It occurs in Latium, and was at first called *latialite;* it has also been considered as allied to sapphire, and named *saphirin;* but more recent examination of its properties prove it to be identical with the species called *lazulite* by Hauy.

HAWK'WEED, in botany, a plant which bears a flower in the form of a marigold. There are several genera and species of plants thus designated.

HAWSE, a sea term, for the situation of the cables before the ship's stern, when she is moored with two anchors out from the bows, as 'a clear or open hawse,' 'a foul hawse,' &c.——*Hawse-hole,* a cylindrical hole in the bow of a ship through which a cable passes.——*Hawser,* a large rope, in size between a cable and a tow-line.

HAW'THORN, or WHITE THORN, in botany, a shrub or tree of the genus *Crataegus,* which bears the red berry called the *haw.* It grows naturally in all parts of Europe; is much used for hedges; and is admired both for the beauty of its foliage and the agreeable perfume of its blossoms.

HAY'WARD, a person who keeps the common herd or cattle of a town.——His office is to see that the cattle neither break nor crop the hedges of inclosed grounds; and to impound cattle that commit trespass therein, or are found running at large in the public roads, contrary to law.

HA'ZEL, in botany, a shrub of the genus *Corylus,* having male flowers growing in long cylindrical aments or catkins, at remote distances from the fruit on the same tree. The nuts grow in clusters, and are of three kinds, the common hazel nut, the cob nut, and the filbert, which latter are the most esteemed.

HEAD, in anatomy, the superior part of the body, placed on the neck, and consisting externally of the face and the hairy scalp; internally, of the brain and the medulla oblongata. [See BRAIN, FACE, &c.] The whole head of the skeleton is spheroidical, composed as it were of two ovals a little depressed on each side: one of them is superior, the extremities pointing forward and backward; the other is anterior, the extremity being turned upwards and downwards, in such a manner as that one extremity of each oval meets, and is lost in the other, at the forehead.—In general, the human head may be considered as the standard, which may be traced, with gradual deviations, through the different classes, until it entirely ceases in the lower orders of animals.——*Head,* among mechanics, the upper and more solid part of inanimate bodies, as the head of a nail, the head of a gate, the head of a hammer.——*Head,* in architecture, an ornament of carved work, or sculpture, frequently serving as the key of an arch, or platband on other occasions. ——In the military art, the *Head of a work* is the front of it next the enemy.

HEAD'LAND, a point of land lying farther out at sea than the rest.——*Headland,* in husbandry, is taken to signify the upper part of land left for the turning of the plough.——*Head-lines,* in a ship, those ropes of all sails which are next to the yards, and by which the sails are made fast to the yard.——*Head-sea,* is when a great wave or billow of the sea comes right a-head of the ship, as she is in her course.——*Head-sails,* those which belong to the fore-mast, and bowsprit.——*Head-stall,* that part of a bridle that goes about the head; also, a kind of halter.——*Head-quarters,* the quarters or place of residence of the commander-in-chief of an army.

HEAD'-ACHE, a painful sensation in the nervous membranes of the head, produced by various causes, and attended with different symptoms, according to its different degrees and the place where it is seated.

HEALTH, that condition of the body, in which all the vital, natural, and animal functions, are performed easily and perfectly, and unattended with pain. The most perfect state of health is generally connected with a certain conformation and structure of the bodily organs, and well marked by certain external signs. To preserve health, it is necessary to be temperate in food, exercise, and sleep; to pay strict attention to bodily cleanliness; to abstain from spirituous liquors, and to guard against excess of all kinds. The Greeks and Romans deified health, representing it under the figure of a woman, whom they supposed to be the daughter of Æsculapius. We find the name of the goddess Salus, or Health, on many medals of the Roman emperors, with different inscriptions, as *Salus publica, Salus reipublicæ, Salus Augusti, &c.*

HEARING, one of the five senses, of which the ear is the organ, with the help of the auditory nerves and membrane. The curious structures of the labyrinth and cochlea of the ear tend to make the weakest sounds audible. When a person exercises great attention in hearing, the *membrana tympani* is stretched so as to render it more susceptible of sounds, and better prepared to catch even the most feeble vibrations of the air. [See EAR.]

HEART, in anatomy, a hollow muscular organ, the function of which is to maintain the circulation of the blood. It is formed of a firm, thick, muscular tissue, composed of fibres, interlacing with each other. It is also composed of nerves, membranes, and vessels. It is divided in the middle by a strong partition, and on each side by two cavities, called ventricles, one the right, or pulmonic, and the other, the left, or systemic. Attached to each is a cavity, called the auricle, and from each proceeds a large tube, called an artery, one called pulmonic, and the other aorta; the first conveying blood to the lungs, and the other expelling it through the system. The blood which is returned from the veins is black, and is called *venous;* that which leaves the heart is red, and is called *arterial.* The two auricles contract and dilate simultaneously with each other, as do also the

HAY, IF STACKED WHEN DAMP, WILL IGNITE, BECAUSE THE MOISTURE INCREASES THE TEMPERATURE TILL IT PRODUCES FERMENTATION.

THE HEART, BY ITS MUSCULAR CONTRACTION, DISTRIBUTES TWO OUNCES OF BLOOD FROM SEVENTY TO EIGHTY TIMES IN A MINUTE.



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ONE GALLON OF WATER, CONVERTED INTO STEAM, WILL RAISE SIX GALLONS AT FIFTY DEGREES TO THE BOILING POINT.

two ventricles. The dilatation is called *diastole*; the contraction *systole*. The causes of the alternate contraction and dilatation of the heart are difficult to decide: they are entirely involuntary, and dependent on the nervous system. By what means the blood is made to penetrate the thousand windings of the capillary system, and what causes impel it to flow back through the veins, are yet subjects of dispute among physiologists. The weight of the human heart, with respect to the weight of the body, is greater in children than in grown persons, in the proportion of 3 to 2. Hence the weight of the heart, with respect to the weight of the body, lessens continually from the birth, till the bodies come to their full growth.——In the Scriptures, the *heart* is spoken of as the organ of sense, or seat of the understanding. And by a metonymy, it is used for an affection or passion: thus we say, in speaking of love, it is an affair of the *heart*.

HEAT, or CALORIC, that principle in nature, by the action of which fluids are evaporated, and solids are either dissipated in vapour, or rendered fluid, or vitrified. Our notions of the nature and properties of heat may be assisted by the following observations:—An intimate connection subsists betwixt light and heat, though it has not been hitherto discovered on what this connection depends. Both are emitted from the sun with the same velocity nearly; both are refracted from transparent bodies, and refracted by polished surfaces; in both, the matter seems exceedingly rare, and consequently the addition, or abstraction of either, cannot sensibly affect the weight of bodies, into which they are introduced: their parts never cohere, but mutually repel each other, and when forcibly accumulated they fly off from one another in all directions. Heat, however, differs from light in this particular, viz. the latter produces in us the sensation of vision, whereas the former excites a sensation which we call by the name of the substance itself. Heat attracts other bodies, and is attracted by them. In consequence of this mutual attraction, it enters into other substances, combines with them, and occasions changes in them.—The *sensation* of heat is produced by particles of heat passing into our bodies, and that of cold by heat passing out of them. We call any thing hot, when it communicates heat to bodies in its vicinity, and cold when it absorbs heat from them. The strength of the sensation depends on the rapidity with which the heat enters or leaves our bodies; and this rapidity is proportional to the difference between our bodies and the hot or cold substance, and to the conducting power of that substance.——*Heat* is considered one of the chief agents in chemistry, because its most obvious sources are chiefly referred to the general head of chemical combination. Thus, fire, or the combustion of inflammable bodies, is nothing more than a violent chemical action attending the combination of their ingredients with the oxygen of the air. Animal heat, is, in like manner, referable to a process bearing no remote analogy to slow combustion, by which a portion of *carbon*, an inflammable principle existing in the blood, is united with the oxygen of the air in respiration, and thus carried off from the system: fermentation is nothing more than a decomposition of chemical elements loosely united, and their reunion in a more perfect state of combination.——*Heat*, among geographers, the heat of different climates, which arises from the different angles under which the sun's rays strike upon the surface of the earth; added to which, the heat of different places is either increased or diminished by the accidents of situation, with regard to mountains and valleys, proximity to the sea, and the like.——*Heat*, among smiths and founders, the degree of heat requisite for iron work, namely, the blood-red heat, the smallest degree; the flame, or white heat, the second degree; and the sparkling, or welding heat, which is the strongest degree.——*Heat*, in racing, a certain prescribed distance which a horse runs on the course.

HEATH, in botany, *Erica*, a genus of beautiful shrubby plants, of which more than 250 species are known. Some of them are natives of Europe, and grow wild; but the greater part are found in South Africa, and are greatly admired on account of their lasting verdure, their light foliage, and the elegance of their flowers.

HEAV'EN, literally the sky, or azure vault which spreads above us like a hollow hemisphere, and appears to rest on the limits of the horizon. Modern astronomy has taught us, that this blue vault is, in fact, the immeasurable space in which our earth, the sun, and all the planets, revolve. In metaphorical language, this space is called the abode of the Deity, and the seat of the souls of the just in the life to come. In these latter senses, it is sometimes called the empyrean, from the splendor by which it is characterized. It is also sometimes called the firmament. The word which, in the first chapter of Genesis, is translated *firmament*, was corrupted, it is said, by the Septuagint translators, and should be rendered *expanse* or *extension*. St. Paul speaks of the *third heaven*; and the orientals always describe seven heavens, or more. The foundation of the doctrine of several heavens was this: the ancient philosophers assumed there were as many different heavens as they saw bodies in motion: they considered them solid, although transparent, and supposed the blue space extended over our heads firm as a sapphire. They could not conceive that otherwise they could sustain those bodies; and they deemed them spherical, as the most proper form for motion. Thus, there were seven heavens for the seven planets, and an eighth for the fixed stars. Ptolemy discountenanced this system. He said, the deities (by which name he calls the stars, for they were adored in his time), moved in an ethereal fluid. It was, however, by very slow degrees that men became acquainted

THE SAME HEAT WHICH RAISES WATER ONE DEGREE, RAISES OIL TWO, OWING TO THE EVAPORATION OF THE WATER.



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with the true science which instructs us in the laws of celestial motion, and the magnitudes, distances, &c. of those effulgent orbs which deck the vast expanse. The heavens then, to follow the path of the Newtonian or true system, are filled with a fluid much finer and thinner than this air, and extending beyond all limits of which we have any conception. There being nothing visible to us in the remote part of the heavens, we can only consider them as the places of the stars. We shall have a vast idea of this space if we consider that the largest of the fixed stars, which are probably the nearest to us, are at a distance too great for the expression of all that we can conceive from figures, and for all means of admeasurement. The sun, which in that little space of the heavens that makes the system of which our world is a part, is in reality nothing more than a fixed star. Round him revolve the planets, among which Jupiter alone is in its solid contents nine hundred times as large as our earth. But these and the other particulars will be found under separate heads; to which we refer.

HEBDOMA'DARY, a member of a chapter or convent, whose duty it is to officiate in the choir, rehearse the anthems and prayers, and perform other services, which on extraordinary occasions are performed by the superiors.

HEBDOM'ARY, a solemnity of the ancient Greeks, in which the Athenians sung hymns in honour of Apollo, and carried in their hands branches of laurel. It was observed on the seventh day of every lunar month; hence the name.

HE'BRAISM, an idiom or manner of speaking peculiar to the Hebrew language.

HE'BREW, the language spoken by the Jews, and which appears to be the most ancient of all the languages in the world. The books of the Old Testament are the only pieces to be found, in all antiquity, written in pure Hebrew; and the language of many of these is extremely sublime. But Hebrew literature, independently of its containing the records of a divine revelation, possesses a peculiar scientific interest. It surpasses in antiquity, general credibility, originality, poetic strength, and religious importance, that of any other nation before the Christian era, and contains most remarkable memorials and trustworthy materials for the history of the human race, and its mental development.—The *Epistle to the Hebrews*, a canonical book of the New Testament. The Hebrews, to whom this epistle was addressed, were the believing Jews of Palestine, and its design was to convince them of the insufficiency and abolishment of the ceremonial and ritual law. In order to which the apostle undertakes to shew, first, the superior excellency of Christ's person above that of Moses; secondly, the superiority of Christ's priesthood above the Levitical; and thirdly, the mere figurative nature, and utter insufficiency, of the legal ceremonies and sacrifices.

HECATE'SIA, in Grecian antiquity, a public entertainment given by the Athenians every new moon, in honour of Hecate.

HEC'ATOMB, amongst the Greeks, was a sacrifice consisting of a hundred oxen offered upon some very extraordinary occasion.—*Hecatomb*, in its most general sense, signifies no more than a sacrifice of a hundred animals; but the ox being the chief of animals used in sacrifice, gave derivation to the word.

HECTIC FEVER, in medicine, an habitual fever, or one which is slow and continued, ending in a consumption.

HECTOGRAM, in the French system of weights and measures, a weight containing 100 grains; equal to 3 ounces, 2 gros, and 12 grains French.

HECTOLITER, a French measure of capacity for liquids, containing 100 liters; equal to a tenth of a cubic meter, or 107 Paris pints.

HECTOM'ETER, a French measure equal to 100 meters; the meter being the unit of a lineal measure. It is equivalent nearly to 308 French feet.

HEDENBERG'ITE, in mineralogy, an ore of iron, in masses, composed of shining plates, which break into rhombic fragments.

HEDERA'CEOUS, in botany, pertaining to, or growing like, ivy.

HED'ERA, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs, consisting of the different kinds of ivy.

HED'GEHOG, in zoology, the *Erinaceus*, a small animal which feeds on worms, insects, frogs, fruit, and the roots of vegetables. It is remarkable for the sharp prickles which enclose it, and for its power of rolling itself into a globe of its own prickles, when in danger; but it unfolds on being put into water. One of the most interesting facts in the natural history of the hedgehog was announced in 1831 by M. Lenz; and as it has since been confirmed by the observations of Professor Buckland and other naturalists, we deem it too important to be omitted in this or any other description that may in future be given of this animal. It is, that the most violent animal poisons have no effect on it; a fact which renders it of peculiar value in forests, where it appears to destroy a great number of noxious reptiles. Repeated experiments fully warrant us in saying, that the venom of the adder (to whom the hedgehog is a mortal enemy) has not the slightest effect upon it; and a German physician asserts, that he gave one several strong doses of prussic acid, of opium, and of corrosive sublimate, none of which did it any harm.

HEGI'RA, the epoch of the flight of Mahomet from Mecca, July 10, 622, whence Eastern nations date the year of 354 days; which is found by subtracting 622 from our year, and then multiplying by 365.52, and dividing by 354.

HEIR, in law, the person who succeeds another by descent to lands, tenements, and hereditaments, being an estate of inheritance, or an estate in fee; because



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nothing passes by right of inheritance but in fee. We give the title to a person who is to inherit after the death of an ancestor, and during his life, as well as to the person who has actually come into possession.——*Heir-apparent*, is a person so called in the lifetime of his ancestor, at whose death he is heir at law.——*Heir-presumptive*, one who, if the ancestor should die immediately, would, in the present circumstances of things, be his heir; but whose right of inheritance may be defeated by the contingency of some nearer heir being born.

HEIR'-LOOM, any furniture or personal chattel, which by law descends to the heir with the house or freehold.

HELI'ACAL, in astronomy, a term applied to the rising or setting of the stars, or, more strictly speaking, to their emersion out of and immersion into the rays and superior splendour of the sun. A star rises heliacally when, after it has been in conjunction with the sun, and on that account invisible, it gets at such a distance from the sun as to be seen in the morning before the rising of that luminary.

HELIAN'THUS, or the Sun-flower, in botany, a genus of plants, class 19 *Syngenesia*, order 3 *Polygamia frustanea*, containing more than twenty species, of which the most curious is the *Helianthus gyrans*, or moving plant, which is found in Bengal, and on the banks of the Ganges: it has a constant and voluntary motion, consisting in an alternate meeting and receding of the leaflets, a motion which does not seem to depend on any external stimulus.

HELI'CITE, fossil remains of the *helix*, or snail-shell.

HELIOCEN'TRIC. In astronomy, the *heliocentric latitude of a planet*, is the inclination of a line drawn between the centre of the sun and the centre of a planet, to the plane of the ecliptic.——*Heliocentric place of a planet*, the place of the ecliptic wherein the planet would appear to a spectator placed at the centre of the sun.

HELIOM'ETER, an instrument for measuring with exactness the diameter of the heavenly bodies.

HE'LIOSCOPE, in optics, a sort of telescope, peculiarly fitted for viewing the sun without pain or injury to the eyes.

HE'LIOSTATE, an instrument by which a sunbeam may be steadily directed to one spot.

HE'LIOTROPE, in mineralogy, a subspecies of rhomboidal quartz, of a deep green colour. It is usually variegated with blood red or yellowish dots, and is more or less translucent. It is generally supposed to be chalcedony, coloured by green earth or chlorite.——In botany, the Sunflower.

HELIOTRO'PIUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are mostly annuals or shrubs.

HELISPHER'ICAL, spiral. The *helispherical line* is the rhomb line in navigation, so called because on the globe it winds round the pole spirally, coming nearer and nearer to it, but never terminating in it.

HE'LIX, in architecture, a spiral line or something that is winding; as, a winding staircase; or a little volute under the flowers of the Corinthian capital.——In anatomy, the whole circuit or extent of the auricle, or external border of the ear.

HELL, in the translation of the Scriptures, and in the Apostle's creed, is used to signify the grave, or place of the dead. In the New Testament, it also signifies the region of the wicked after death. The ancient Jews seem to have had no knowledge of any but temporal punishments, and the law threatens no other; but, after they became conversant with the Greeks, they adopted many of their opinions on this subject, and added some inventions of their own. They believed hell to be in the centre of the earth, and that there were three roads leading to it; one through the wilderness, by which Dathan and Abiram passed; another through the sea; and the third in Jerusalem.—Amongst the Greeks and Romans, the idea of hell varied according to the fancy and imagination of each individual. The general idea, however, was, that hell was divided into two mansions, the one called *Elysium*, on the right hand, pleasant and delightful, appointed for the souls of good men; the other called *Tartarus*, on the left, a region of misery and torment, appointed for the wicked.

HEL'LEBORE, in botany, *Helleborus niger*, or Christmas rose, an exotic plant, the root of which is employed medicinally. The ancients esteemed it as a powerful remedy in maniacal cases; at present it is exhibited principally as an alterative; and it is also recommended in dropsies, and some cutaneous diseases. There is also the white hellebore of the genus *Veratrum*. Both are acid and poisonous, though valuable in medicine.

HELLEBO'RUS, in botany, a genus of plants, class 13 *Polyandria*, order 7 *Polygynia*. The species are perennials.

HEL'LENISM, a phrase in the idiom, genius, or construction of the Greek tongue. This word is only used when speaking of authors who, writing in a different language, express themselves in a phraseology peculiar to the Greek.

HELLENIS'TIC, an epithet for whatever pertained to the Hellenists. The *Hellenistic language* was the Greek spoken by the Jews who lived in Egypt and other parts where the Greek tongue prevailed. In this language, it is said, the Septuagint was written, and also the books of the New Testament; and that it was thus denominated to shew that it was Greek filled with Hebraisms and Syriacisms.

HELM, an instrument suspended along the hindpart of a ship's stern-post, where it turns upon hinges to the right or left, serving to direct the course of a vessel, as the tail of a fish guides the body. The helm is usually composed of three parts, the rudder, the tiller, and the wheel; except in small ships, where the wheel is unnecessary:—There are several terms in the naval language relating to the helm; as,





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ALKALIES, SUCH AS POTASH AND AMMONIA, CONVERT INTO A DARK PURPLE-RED TINT, THE PALE SOLUTION OF HEMATINE.

*bear up the helm*; that is, let the ship go more large before the wind; *helm a midship*, or *right the helm*, that is, keep it even with the middle of the ship; *port the helm*, put it over the left side of the ship; *starboard the helm*, put it on the right side of the ship.

HEL'MET, a headpiece, or armour for the head, which was formerly the noblest part of coat armour. It covered both the head and face, only leaving an aperture in the front secured by bars, which was called the visor. It is still used in heraldry by way of crest over the shield or coat of arms, in order to express the different degrees of nobility, by the different manner in which it is borne.——The modern helmet is worn by some of the cavalry to defend the head against the broad-sword.

HE'LOTS, the name given to certain slaves in Sparta, who were originally inhabitants of the town of Helos, but carried off and reduced to slavery by the Heraclidæ, about 1000 B.C. They differed from other Greek slaves in not belonging individually to separate masters; being the property of the state, which alone had the disposal of their lives and freedom.

HELVE'TIC, an epithet designating what pertains to the *Helvetii*, the ancient inhabitants of Switzerland, or to the modern states and inhabitants of the Alpine regions; as the *Helvetic* confederacy, &c.

HEM'ACHATE, in mineralogy, a species of agate, of a blood colour.

HEM'ATIN, or HEM'ATINE, in chemistry, the colouring principle of logwood, of a pale red colour and bitterish taste.

HEM'ATITE, in mineralogy, the name of two ores of iron, the *red* and the *brown* hematite. They are both of a fibrous structure, their fibres usually diverging, or even radiating from a centre.

HEMERALO'PIA, in medicine, nocturnal blindness; a defect in the sight, which consists in not being able to see in the evening, though the sight is perfect enough in the day-time. At sun-set, objects appear to persons afflicted with this complaint as if covered with an ash-coloured veil, which gradually changes into a dense cloud, and appears to intervene between the eyes and surrounding objects. When brought into a room faintly lighted by a candle, where all the bystanders can see tolerably well, they can scarcely discern any object, and at moon-light their sight is still worse.

HEMEROCAL'LIS, in botany, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The species are bulbs, of the lily kind.

HEM'I, a Greek word used in the composition of several terms borrowed from that language. It signifies *half*, the same as *semi*, and *demi*: thus, *hemiplegia* is a palsy of one *half* of the body; *hemistich*, *half* a verse; *hemicycle*, a *semi*-circle.

HEMICRA'NIA, in medicine, a species of head ache, which affects only one half or side of the head.

HEMIOPI'SIA, in medicine, a defect of vision in which the person sees the half, but not the whole of an object.

HEMIPLE'GIA, in medicine, a paralytic affection of one side of the body.

HEMIP'TERA, in entomology, the second order of insects, which have the wings half crustaceous and half membraneous, as cockroaches, crickets, grasshoppers, &c.

HEM'ISPHERE, in astronomy, one half of the sphere. The equator divides the sphere into two parts, called the *northern* and the *southern hemispheres*. The horizon also divides the sphere into two parts, called the *upper* and *lower hemispheres*. Hemisphere is also used for a map or projection of half the terrestrial globe, or half the celestial sphere, on a plane, and is then often called *planisphere*.

HEMISPHERE'OIDAL, in geometry, an appellation given to whatever approaches to the figure of a hemisphere, but is not exactly so.

HEM'ISTICH, in poetry, denotes half a verse, or a verse not completed. In reading common English verse, a short pause is required at the end of each hemistich.

HEM'LOCK, a genus of plants called *Conium*, of which the species *maculatum*, or greater hemlock, is one of our few poisonous plants, but now used in medicine.

HEMP, a fibrous plant, of the *Dioecia* class, and of the genus *Cannabis*; well known for its use in the manufacture of cordage and cloths. The stem is herbaceous, upright, simple, slightly pilose, attaining the height of from four to six feet; the male flowers, which are on separate stems, are green, resembling those of the hop; the female flowers are inconspicuous, and the fruit is a little, hard, bivalve capsule, containing a single seed. It may be planted upon any land; the poorer producing that which is fine in quality, though small in quantity; and the richer and stronger, that which is abundant in the former, but coarse in the latter. Besides its use in manufactures, hemp is said to recommend itself to the agriculturist, by driving away almost all the insects that feed upon other vegetables. Hence, in some parts of Europe, a belt of this plant is sown round gardens, or other spots, to preserve them. Only the coarser kinds of hemp are employed in making cordage; the finer being used for cloth, which though incapable of receiving the delicacy of linen, is incomparably stronger, equally susceptible of bleaching, and possessed of the property of improving its colour by wear. The English hemp is much superior in strength to that which grows in any other country. Next to this is the Russian, from which sacking is usually made. A large quantity of Russia-sheeting, coarser at the price than any other foreign cloth, is imported into England on account of its strength. The great importance of hemp to the maritime interests of the United Kingdom, occasions it to form a considerable article of commerce. The cordage and sails of a first-rate ship of war are said to consume 180,000 lbs. of rough hemp.

HEMP-SEED CONTAINS AN OIL WHICH IS EMPLOYED FOR MAKING SOFT SOAP, FOR PAINTING, AND FOR BURNING IN LAMPS.

HEN, a female bird of any species, but



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IT IS THOUGHT THAT THE WORD "HERALD" IS DERIVED FROM THE SAXON "HERERHAULD," WHICH SIGNIFIES THE CHAMPION OF AN ARMY.

applied particularly to the female of the domestic fowl of the gallinaceous kind.

HEN'BANE, in botany, the *Hyoscyamus*, of several species. The roots, leaves, and seeds are poisonous, but, from its narcotic qualities, it is occasionally serviceable in medicine.

HENDEC'AGON, in geometry, a figure of eleven sides, and as many angles.——In fortification, *hendecagon* denotes a place defended by eleven bastions.

HENDECASYL'LABLES, in poetical composition, a verse of eleven syllables. Among the ancients it was particularly used by Catullus, and is well adapted for elegant trifles.

HE'PAR SUL'PHURIS, or Liver of Sulphur, in chemistry, the name commonly given to a sulphuret made either with potash or soda. It has a disagreeable fetid smell, but is in high esteem with some as a medicine to decompose corrosive sublimate, when taken into the stomach.

HEPAT'IC, in medicine, an epithet for whatever belongs to the liver.——*Hepatic artery*, the artery which nourishes the substance of the liver.——*Hepatic duct*, the trunk of the biliary pores. It runs from the sinus of the liver towards the duodenum, and is joined by the cystic duct.

HEPAT'IC AIR, in chemistry, sulphuretted hydrogen gas; or inflammable air variously combined with sulphur, alkalies, earths, and metals.

HEPATIC MERCU'RIAL ORE, compact sulphuret of mercury or cinnabar, a mineral of a reddish brown colour. It occurs in compact masses with an even or fine grained structure, and has some lustre.

HEP'ATITE, a name given to the fetid sulphates of barytes. It sometimes occurs in globular masses, and is either compact or of a foliated structure. By friction or the application of heat it exhales a fetid odour, like that of sulphuretted hydrogen.

HEPATI'TIS, in medicine, inflammation of the liver, of which there are two kinds, the acute and chronic. Both require attentive medical treatment. In warm climates the liver is more apt to be affected with inflammation than perhaps any other part of the body, probably from the increased secretion of the bile which takes place when the blood is thrown on the internal parts, by an exposure to cold; or from the bile becoming acrid, and thereby exciting an irritation of the part.

HEPTAGON, in geometry, a figure of seven sides and seven angles.——In fortification, a place is termed a heptagon that has seven bastions for its defence.

HEPTAG'ONAL NUMBERS, in arithmetic, a sort of polygonal numbers, wherein the difference of the terms of the corresponding arithmetical progression is 5. One of the properties of these numbers is, that if they be multiplied by 40, and 9 be added to the product, the sum will be a square number.

HEPATOSCO'PIA, a mode of divination, by which conjectures concerning futurity were drawn from the appearances exhibited by the liver of the victim offered in sacrifice.

HEPTACHORD, in ancient poetry, verses sung or played on seven chords or different notes; in which sense the word was applied to the lyre when it had but seven strings.

HEPTACAP'SULAR, a term in botany, signifying that the plant has seven cells or cavities for seeds.

HEPTAGYN'IAN, in botany, an epithet for a plant having seven pistils.

HEPTAN'DRIA, the seventh class of the Linnæan system of plants, containing four orders, *Monogynia*, *Digynia*, *Tetragynia*, and *Heptagynia*.

HEPTARCHY, a government exercised by seven persons; or, a nation divided into seven governments.—— *Saxon heptarchy*, the seven kingdoms existing in England, between the fifth and ninth centuries. These kingdoms were severally named, 1. Kent; 2. Sussex; 3. Wessex; 4. Essex; 5. Northumberland; 6. East-Angleland; 7. Mercia. The *heptarchy* was formed by degrees; but it may be said to have commenced in 449, when Hengist arrived on the island. In 827 Egbert was enabled, by a combination of circumstances, to assume the title of King of England; but, in reality, three of the kingdoms, Northumberland, East Angleland, and Mercia, were still governed by their own kings, though those kings were his vassals and tributaries. The kingdoms he actually governed were Kent, Sussex, Wessex, and Essex.

HERACLI'DÆ. *The return of the Heraclidæ into Peloponnesus*, in chronology, constitutes the beginning of profane history; all the time preceding that period being accounted fabulous. This return happened in the year of the world 2682, a hundred years after they were expelled, and eighty after the destruction of Troy.

HER'ALD, the title of an officer, whose duty it anciently was to declare war, to challenge in battle and combat, to proclaim peace, and to execute martial messages; but who is, at present, to conduct royal processions, the creations of nobility, and the ceremonies of knighthood; to publish declarations of war, not to the enemy but at home; to proclaim peace; to record and blazon armorial bearings; and to regulate abuses in arms, under the authority of the earl-marshal, by whom he is created. The heralds were formed into a college by Richard the Third. The three chief heralds are called kings at arms, the principal of which is Garter; the next is called Clarencieux, and the third Norroy; these two last are called provincial heralds. Besides these there are six other inferior heralds, viz. York, Lancaster, Somerset, Richmond, Chester, and Windsor; to which, on the accession of king George I. to the crown, a new herald was added, styled Hanover herald; and another styled Glocester king at arms.——*Heralds*, amongst the ancient Greeks and Romans, were held in great estimation, and looked upon as sacred. Those of Greece carried in their hands a rod of

HERALDS WERE FORMERLY CREATED BY THE KING HIMSELF, WHO, POURING WINE FROM A GOLDEN CUP ON HEIR HEAD, GAVE THEM THEIR TITLE.



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ARMS, AS MARKS OF HONOUR, SAYS DUGDALE, WERE FIRST USED BY GREAT COMMANDERS IN WAR, TO DISTINGUISH THEIR PERSONS TO THEIR FOLLOWERS.

laurel, round which two serpents, without crests, were twisted as emblems of peace.

HER'ALDRY, the science which teaches the true use of, and laws relating to, armorial bearings; viz. how to blazon or describe them in proper terms, and how to marshal or dispose the different arms in an escutcheon or shield. The introduction of armorial bearings, in place of the images and statues of the Romans, (known among them by the term *jus imaginum*), is to be ascribed to the northern tribes who overran Europe on the decline and fall of the empire. Although they were at first purely military, yet, by being transmitted to their posterity, they became badges of civil rank and honour; and, in course of time, other circumstances gave rise to bearings which were not purely military. Thus, on the establishment of the feudal system, the tenants of the king, or the great lords, represented on their shields the services they owed to their superiors by way of an acknowledgment of their fidelity, whence originated roses, cinque-foils, spur-rowels, bows and arrows, hunting-horns, ships, &c. When, inspired with religious enthusiasm, the martial youth of almost all Europe left their homes, about the end of the 11th century, to conquer the Holy Land, the use of arms became more general and necessary. In order to distinguish the nations, armies, and families, the princes and commanders chose their symbols, sometimes in commemoration of the exploits and events of the campaign, or of the dignity of the commander, and sometimes from the cause in which they were engaged. This probably gave rise, or at least made it more common, to introduce the figure of the cross, which is borne in a diversity of forms. In like manner, on the introduction of tournaments, they are supposed to have given rise to the fesse, pale, bend, and other ordinaries, which represented the fillets or lists of different kinds which were worn by the combatants and those who attended. And it was from the practice of a herald's describing and recording the names, arms, and proofs of nobility, of the knights at tournaments, that the science took its name.—[So numerous are the heraldric terms, that to attempt to give them, with their definitions and distinctions, would occupy several pages, however rigidly we might pursue our plan of condensation. Those, however, of any real import to the general reader, are given as separate articles in their alphabetical order.]

HERBA'RIUM, or HORTUS SIC'CUS, a collection of specimens of plants carefully dried and preserved. Various methods have been adopted by botanists for obtaining a hortus siccus; but that of pressing the plants that are to be dried, in a box of sand or with a hot smoothing iron, has been recommended. If pressure be employed, that is best effected by means of a botanical press made for the purpose, in which the plants are put, with sheets of dry paper between. At first they ought to be pressed gently, and occasionally taken out in order to see that none of the leaves are rumpled or folded. As they continue to dry, the pressure may be increased. When properly dried, the specimens should be placed in sheets of writing paper, and slightly fastened by making the top and bottom of the stalk pass through a slip of the paper, cut for the purpose. The name of the genus and species should be written down, the place where it was found, the nature of the soil, and the season of the year. The specimens may be collected into general orders and classes, and titled and preserved in a portfolio or cabinet.

HERB, a plant or vegetable with a soft or succulent stalk or stem, which dies to the root every year, and is thus distinguished from a shrub, which has ligneous or woody stems. In botanic science, however, it means that part of a vegetable which rises from the root, and comprehends the stem and leaves, &c.——The fourth tribe into which Linnæus divided the vegetable kingdom is termed *Herbæ*.

HER'BAL, a book giving an account of the names, natures, and uses of plants; their classes, genera, and species.

HER'BORIZE, a botanical term, signifying to search for plants, or to seek new species of plants, with a view to ascertain their character, and to class them.

HERCULA'NEUM, an ancient city of Naples, overwhelmed by an eruption of Mount Vesuvius in the reign of Titus: it was discovered in the year 1689, since which time many manuscripts, paintings, statues, and other relics of antiquity, have been discovered. From the excavations that have been made from time to time, the ancient streets and buildings have been, as it were, again thrown open, and the domestic affairs of the ancients revealed to the eyes of modern archæologists. Since 1828 new excavations have taken place, and a splendid private house has been discovered, with a suite of chambers, and a court in the centre. There is a separate part of the mansion allotted to females, a garden surrounded by arcades and columns, and also a grand saloon, which probably served for the meeting of the whole family. Another house, also discovered, was very remarkable, from the quantity and nature of the provisions in it, none of which had been disturbed for eighteen centuries, for the doors remained fastened, in the same state as they were at the period of the catastrophe which buried Herculaneum. The family which occupied this mansion was, in all likelihood, when the disaster took place, laying in provisions for the winter. The provisions found in the store-rooms consist of dates, chestnuts, large walnuts, dried figs, almonds, prunes, corn, oil, pease, lentils, pies, and hams. The internal arrangement of the house, the manner in which it was ornamented, all, in fact, announced that it had belonged to a very rich family and to admirers of the arts; for there were discovered many pictures, representing Polyphemus and Galatea, Hercules and the three Hesperides, Cupid and a Bacchante,

ACCORDING TO HOMER, VIRGIL, AND OVID, IT WAS CUSTOMARY FOR KINGS TO HAVE DEVICES.



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Mercury and Io, Perseus killing Medusa, and others. There were also in the same house, vases, articles in glass, bronze and terra cotta, as well as medallions in silver, representing in relief Apollo and Diana.

HERCU'LEAN, an epithet expressive of the great labour necessary to execute any task; such as it would require the strength or courage of Hercules to encounter or accomplish.

HER'CULES, in astronomy, a constellation in the northern hemisphere, (named from the hero of mythologic fable), containing 113 stars.

HEREDI'TAMENTS, in law, lands, tenements, and whatever immoveable things a person may have to himself and his heirs, by way of inheritance; and which, if not otherwise bequeathed, descend to him who is next heir, and not to the executor, as chattels do.

HEREDI'TARY, an appellation given to whatever belongs to a family by right of succession, from heir to heir. Some monarchies are hereditary, and others elective; and some hereditary monarchies descend only to the heirs male, as in France; but others, to the next of blood, as in Spain, England, &c.——*Hereditary* is also applied to offices and posts of honour annexed to certain families; thus the office of earl-marshal is hereditary in the family of Howard. It is also figuratively applied to good or ill qualities, supposed to be transmitted from a parent to a child; as, hereditary bravery, hereditary pride.

HER'ESY, an error in some fundamental doctrine of the Christian faith, or a private opinion different from that of the orthodox church.——The origin of *heretics* is to be referred to the time when a Christian church was publicly established, and began to acknowledge certain dogmas as orthodox, and to designate opinions at variance with them as false. Yet a diversity of opinions always existed on certain points, because the Bible is a book of faith, treating of divine subjects in the imperfect language of men, and therefore admitting, in many passages, different explanations, according to preconceived views. How awful, then, and how repulsive to the fine principles of that religion which inculcates the precepts of mercy and good-will to man, is that persecuting spirit which, at different periods, has sacrificed whole hecatombs of unoffending victims at the shrine of ignorance and bigotry!

HER'ETOCH, among our Saxon ancestors, signified the leader or commander of an army, or the commander of the militia in a county or district.

HER'IOT, in law, the fine paid to the lord of the manor, by copyholders, on the death of the tenant.

HER'ISSON, in fortification, a beam or bar armed with iron spikes pointing outwards, and turning on a pivot; used to block up a passage.

HERMAPH'RODITE, a term to designate the union of the two sexes in the same individual.——In botany, a flower that contains both the anther and the stigma within the same calyx, or on the same receptacle.

HERMENEU'TICS, the art of finding the meaning of an author's words and phrases, and of explaining it to others. The word is seldom used except in reference to theological subjects.

HERMET'ICAL SEALING, among chemists, a method of stopping glass vessels so closely that the subtilest spirit cannot escape. This is usually done by heating the neck of a vessel in the flame of a lamp with a blowpipe, till it be ready to melt, and then, with a pair of hot pincers, twisting it close together.

HER'MIT, a person who lives in total seclusion from the world. It is usually applied to one who lives in solitude, for the purpose of religious contemplation and devotion.

HER'NIA, in surgery, a rupture; a tumour formed by the displacement of a soft part, which protrudes by a natural or accidental opening, from the cavity in which it is contained. As soon as a patient perceives that he is affected with a hernia, he should have recourse to medical advice, for the disease is then in its most favourable state for treatment. The hernia is immediately reduced, and must then be subject to a constant compression, which is done by means of a truss.

HE'RO, in pagan mythology, an illustrious mortal, but supposed by the populace to partake of immortality, and after his death to be placed among the gods.——*Hero* is also used in a more extensive sense for a great, illustrious, and extraordinary personage; particularly one eminent for valour, courage, intrepidity, and other military virtues.——*Hero*, in a poem or romance, is the principal personage, or the one who has the principal share in the actions related; as Achilles in the Iliad, Ulysses in the Odyssey, &c.——*Heroic verse*, hexameter verse, so called because it is used by poets in their heroic poems.——*Heroic age*, that age or period of the world wherein the heroes, or demigods, are supposed to have lived. The heroic age coincides with the fabulous age.

HER'ON, in ornithology, a large bird of the genus *Ardea*, distinguished by having a long bill, a compressed body, long slender legs, and moderate wings. Herons are very expert fishers, and take prey either by wading after it where the water is shallow, or by diving from the air, when the object of their pursuit appears near the surface of the water. They digest an enormous load of food in a short time, and again return to their destructive occupation with new vigour and appetite.

HER'PES, in medicine, a term applied to several cutaneous eruptions from their tendency to spread or creep from one part of the skin to another. They are generally seen in small distinct clusters, accompanied with itching, and terminating in furfuraceous scales. This disease takes various names according to its form or the part

THE CODE OF JUSTINIAN CONTAINS MANY ORDINANCES AGAINST HERETICS, AND IT WAS INCUMBENT ON ALL TO DENOUNCE THEM.

THE TERM "HERMETICAL," IN CHEMICAL SCIENCE, IS DERIVED FROM HERMES, THE FABULOUS PARENT OF EGYPTIAN CHEMISTRY.



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affected; as the ring-worm, erysipelas, &c.

HER'RING, in ichthyology, (*Clupea harengus* of Linnæus) a prolific fish, common in most seas, where they are found in immense shoals. The grand shoal of many millions, divided into columns of five or six miles in length, and about four in breadth, appears at the Shetland Isles in June, where they divide, and branch off in all directions. Their progress is marked by the number of birds which follow them to prey upon them. Those which flock to the British coasts are to be found in the greatest number off Yarmouth, the mart for herrings. This instinct of migration was given to the herrings, that they might deposit their spawn in warmer seas. It is not from deficiency of food that they set themselves in motion; for they come to us full of fat, and on their return are almost universally observed to be lean and out of condition. They are full of roe in the end of June, and continue in perfection till the beginning of winter, when they deposit their spawn. [See FISHERIES.]

HERSE, in fortification, a harrow full of iron spikes.

HES'PER, in astronomy, the evening star; an appellation given to the planet Venus, when it sets after the sun.

HETEROCLITE, in grammar, a word which is irregular or anomalous, either in declenaion or conjugation, or which deviates from the ordinary forms of inflection in words of a like kind.

HETEROPHYLLOUS, in botany, producing a diversity of leaves.

HETEROS'CH, in geography, those inhabitants of the earth which have their shadows falling but one way, as those living between the tropic and polar circles.

HEX'AGON, in geometry, a figure of six sides and angles.

HEXAGYN'IA, in botany, an order of plants which have six styles in the flowers.

HEXAHE'DRON, in geometry, one of the five regular solids, being nearly a cube.

HEXAM'ETER, in ancient poetry, a verse consisting of six feet, the first four of which may be either dactyls or spondees, the fifth must regularly be a dactyl, and the sixth always a spondee.

HEXAN'DRIA, in botany, one of the Linnæan classes, comprehending those plants which have six stamens in each flower, as the pine-apple, bamboo, spiderwort, lily of the valley, arrow-grass, &c.

HEX'ASTYLE, in architecture, a building with six columns in front.

HIA'TUS, an unpleasant opening of the mouth, when vowels end and begin words; also any deficiency in a manuscript which destroys the connexion.

HI'BERNACLE, in botany, the winter quarters of a plant, that is, a bulb or a bud, in which the embryo of a future plant is enclosed by a scaly covering, and protected from injuries during winter.

HIDE, a word formerly used in land-measure, for such a space as might be ploughed with one plough; or, as much as would maintain the family of a *hide*, or mansion-house. According to some, a *hide* was sixty acres, others make it eighty, and others a hundred. The quantity, very probably, was always determined by local usage only.

HI'DEBOUND, in farriery, a term for a disease in horses and cattle when the skin cleaves to the sides.——Also a term in botany; a tree being said to be *hidebound*, when the bark is so close or firm as to impede the growth.

HIDES, the skins of large cattle, such as bullocks, cows, horses, &c. either in the raw or cured state. Vast quantities are annually imported into Great Britain from South America, the European continent, Morocco, the Cape of Good Hope, &c.

HI'ERARCHY, a term literally signifying *holy government*, and applied sometimes to the supposed polity, or social constitution, among angels. Also, ecclesiastical government, or the subordination of rank among the different orders of clergy.

HIEROGLYPHICS, in antiquity, mystical characters or symbols used in writings and inscriptions, particularly by the Egyptians, as signs of sacred, divine, or supernatural things. The hieroglyphics were figures of animals, parts of the human body, &c., containing a meaning which was intelligible only to the priests, and those who were initiated in their mysteries. In a general sense, a hieroglyphic is any symbol or figure which may serve to represent an object and convey a meaning.

HIEROGRAM'MATISTS, in antiquity, priests amongst the Egyptians who presided over learning and religion. Their duty was to take care of the hieroglyphics, and expound religious mysteries and opinions. They were also skilled in divination, and were honoured with many exemptions from civil duties and taxes.

HIEROM'ANCY, in Grecian antiquity, a species of divination, which predicted future events by observing the appearances of the various things offered in sacrifice.

HIEROM'NEMON, in ancient Greece, a magistrate who presided over the sacred rites and solemnities.

HIERON'ICES, in antiquity, a conqueror at the Olympic, Pythian, Isthmian, and Nemean games.

HIEROPHAN'TES, in Grecian antiquity, the priests and priestesses who were appointed by the state to have the supervisal of sacred rites, and to take care of the sacrifices.

HIEROPH'YLAX, an officer in the Greek church, who was guardian or keeper of the holy utensils, vestments, &c. answering to our sacristan or vestry-keeper.

HI'GHNESS, a title of honour given to princes. The kings of England before James I. were not saluted with the title of "majesty," but that of highness only. At present the children of crowned heads are generally styled *royal highness*. Those of the emperors of Austria and Russia are styled *imperial highness*.

HIGH-PRIEST, the head of the Jewish



THE HERRING WAS UNKNOWN TO THE ANCIENTS, BEING RARELY, IF EVER, FOUND IN THE MEDITERRANEAN.

HEXAMETER VERSE IS SUSCEPTIBLE OF GREAT VARIETY, AND IS DISTINGUISHED BY ITS FLOWING HARMONY AND ITS NUMEROUS PAUSES.

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THE HINDOOS ARE GENERALLY BELOW THE EUROPEANS IN STATURE, AND THE FORM OF THE FEMALES IS SLENDER AND DELICATELY PROPORTIONED.

priesthood. Moses conferred this dignity upon his brother, in whose family it descended without interruption. After the subjugation of the Jews by the Seleucidæ, the Ptolemies, and the Romans, it was often arbitrarily conferred by the foreign masters. The importance of this officer is indicated by the splendour and costliness of his garment, which was among the most beautiful works of ancient art.

HILA'RIA, in antiquity, a festival celebrated by the Romans on the 8th of the calends of April, in honour of the god Pan.

HI'LUM, in botany, the eye; an external mark of the umbilical chord, where it adheres to the pericarp, as in the bean, the pea, &c.

HINDOOS', the primitive inhabitants of the East Indies; a people distinguished for their humanity, gentleness, industry, and knowledge of the polite arts, at a time when most of their Asiatic neighbours were yet only in the first stages of civilization, when the Greeks lay in obscurity, and the nations of Europe were in a state of barbarism. They have preserved their national character from the most distant ages, even under the dominion of foreigners, and have retained to the present day their language, their written characters, their government, religion, manners, customs, and habits of life. They possess great natural talents, but are at present deprived of opportunities for their development, though they are still largely engaged in manufactures and commerce. In earlier times, before they were oppressed by a foreign yoke, they had reached a higher degree of civilization, and their country has been considered as the cradle of the arts and sciences. They are divided into four distinct classes, or *castes*, which, to the great disadvantage of cultivation, are essentially and perpetually separate from each other, so that no transition from one to another is possible. But the most extraordinary custom of the Hindoos is the burning of widows at the funeral of their husbands. [See CASTE and SUTTEES.]

HIPPOCEN'TAUR, in ancient fable, a supposed monster, half man and half horse. The *hippocentaur* differed from the *centaur* in this, that the latter rode on an ox, and the former on a horse, as the name imports.

HIP'POCRAS, a medicinal drink, composed of wine with an infusion of spices and other ingredients; used as a cordial.

HIPPOC'RATES' SLEEVE, a kind of bag, made by uniting the opposite angles of a square piece of flannel, used for straining syrups and decoctions.

HIPPODROME, in antiquity, a course for chariot and horse races. There are in England some vestiges of similar courses, the most remarkable of which is that near Stonehenge. This hippodrome occupies a tract of ground extending about two hundred druidical cubits, or three hundred and fifty feet, in breadth, and six thousand druidical cubits, or more than a mile and three quarters, in length. It runs directly east and west, and is completely inclosed with a bank of earth. The goal and career are at the east end. The goal is a high bank of earth, raised with a slope inwards, on which the judges are supposed to have sat. There is one about half a mile to the southward of Leicester; another near Dorchester; and a third on the banks of the Lowther, near Penrith in Cumberland. But these must have been humble imitations indeed of the splendid structures erected in ancient times, as may be seen in the description of the one at Olympias, as given by Pausanias, or of that which was finished by Constantine, and which still fills the traveller who visits the Turkish capital with astonishment. It is surrounded by two ranges of columns, extending farther than the eye can reach, raised one above the other, and resting on a broad foundation, and is adorned by an immense quantity of statues, in marble, porphyry, and bronze.

HIPPOPOTA'MUS, a monstrous quadruped, equal to the rhinoceros in size and strength, being from 12 to 20 feet long, supposed to be the *behemoth* of Job, and called the river-horse; the head very large, the body fat, and the legs short and thick, the teeth large, and with tusks harder and whiter than those of the elephant. It lives chiefly in water, and walks at the bottom, raising its head occasionally for respiration. It feeds on grain and vegetables, and unless attacked, or ill used, is perfectly harmless; but its skin, for the most part, resists a bullet. It has been chiefly discovered on the banks of the rivers Nile, Niger, Gambia, and Zaire. It is sometimes seen in salt water. In Guinea, the rivers, lakes, and marshy grounds afford numbers of them, and in some parts of Caffraria they are still more common. Their flesh is highly esteemed by the Hottentots and many other nations.

HIPPU'RIS, in botany, a genus of plants, class 1 *Monandria*, order 1 *Monogynia*. The species are perennials. The HIPPURIS is also the *Equisetum sylvaticum* of Linnæus.

HIPS, in botany, the ripe fruit of the dog-rose, which is principally made into a sweetmeat.

HIRU'DO, in entomology, the Leech, a well known insect, with a flatted but not jointed body, broader at the end than elsewhere, and the skin soft and glossy. The principal species are the Medicinal Leech and the Horse Leech.

HIRUN'DO, in ornithology, a genus of birds, of the order *Passeres*; comprehending the common house-swallow, the field swallow, the martin, and the goat-sucker. It is wonderful to observe with what degrees of architectural skill, Providence has endued birds of the same genus, and nearly correspondent in their modes of life. While the swallow and the house martin discover the greatest address in raising, and securely fixing, crusts of loam, of which their nests are formed, the bank-martin makes his hole in the sand, which is serpentine, horizontal, and two feet deep.——The nests of the *Hirundo esculenta*, or esculent swallow, are

AN UNMARRIED HINDOO AT TWENTY-FIVE, AND A FEMALE AT FIFTEEN, ARE CONSIDERED AS EXTRAORDINARY OCCURRENCES.



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A GOOD HISTORIAN WILL GIVE HIS READERS A CONNECTED SERIES OF IMPORTANT FACTS, AVOIDING ARGUMENTS AND DECLAMATIONS.

reckoned a most exquisite delicacy among the Chinese, who make them into soups and use them in their most delicate dishes. ——*Hirundo*, the *Swallow-fish* or *Tub-fish*, in ichthyology, a species of *trigla*, with a somewhat prickly head, and with a remarkable pinnule at the pectoral fins: which are so long, as to be of use in flying, or raising itself above the water. Hence, by some inaccurate writers, it has been confounded with the exoccetus, or flying-fish.

HISTORY, in its general sense, consists of all that kind of knowledge which belongs to narrative; and stands opposed to science, which is demonstrated knowledge; and to philosophy, which is matter of opinion. History, then, denotes narration and description of every kind; but, as pre-eminent, the narrative of human affairs is styled *history* absolutely, while narratives or descriptions of other objects, are distinguished by specific additions. He that writes the history of his own times, is not only in danger of being partial, but of unacquaintance with many things, which time tardily brings to light; and he that writes the history of a former period, is dependent on the *dicta* of others. It has been well and truly said, that if truth is the historian's greatest object, justice is his first duty. He must have the rare power of renouncing his private feelings, and, whilst he investigates or writes as an historian, he must elevate himself above his country, sect, and age, so as not only to be willing to acknowledge the faults of his own party, and the merits of his adversaries, but, what is far more difficult, he must divest himself of the peculiar views of his age, or country, or sect, and be able to enter into those of others, and not measure them by his own standard. Among the numerous causes of historical falsehood, of which it would be useful to take the most scrutinizing view, there is one which appears eminently deserving of remark; and this is, the extraordinary care that, in public as well as private life, must frequently be employed, by those who know it best, to prevent the publication of the truth.—The uses of history are as varied as they are important. To become acquainted with the characters of men, the marks, sources, and effects of their passions and prejudices, the power and changes of their customs, and the like, is an essential and necessary step to prudence; and all this knowledge is considerably improved by history, which teaches us to make other men's experience our own, to profit by it, and to learn wisdom from their misfortunes. Persons who read history merely for amusement, or, having in view some particular branch of learning, attend only to certain branches of history, are not confined to that order and connection which is absolutely requisite for obtaining a proper knowledge of history; the most regular, as well as successful way of studying which, is to begin with an epitome of universal history, and afterwards apply to the history of particular nations and commonwealths: for the study of particular histories is only extending the knowledge of particular parts of universal history. Unless this be our plan, we shall only fill the memory with some events; which may be done without applying to history, or pretending to the knowledge of it.

HISTORY PIECE, in painting, a representation of any remarkable event, which exhibits the actors, their actions, and the attending events to the eye, by figures drawn to the life. This species of painting is called *historical* painting.

HISTRION'IC ART, that of acting in dramatic representation. *Histrio*, in ancient Rome, signified an actor or comedian; but more especially a pantomimist, whose talents were exerted in gesticulations and dancing.

HITCH, among seamen, a sort of knot or noose for fastening a rope to any thing. Hitches are distinguished by the names of a *half-hitch*, a *clove-hitch*, a *rolling-hitch*, &c., according to the nature of the knot.

HOAR-FROST, the white particles of ice formed by the congelation of dew or watery vapours.

HOAR'HOUND, in botany, the name of several plants of different genera. The common hoarhound is the *marrubium vulgare*. It has a bitter taste, and is used as an attenuant.

HOCK'DAY, or HOKE'DAY, a day of feasting and mirth, formerly held in England the second Tuesday after Easter, to commemorate the destruction of the Danes in the time of Ethelred.

HOG, (*sus*) in zoology, a well-known and valuable quadruped. His form is inelegant, his motions uncouth and unwieldy, his appearance slothful and stupid, and his whole life a succession of torpor and gluttony. But, with these and many other repugnant qualities, he is of incalculable benefit to mankind. His flesh is pleasant, substantial, and nutritious, particularly to persons employed in hard labour; and as pork takes salt better than almost any other meat, it forms an important article in naval provisions. The domesticated varieties of the hog are exceedingly numerous: the generic characters are, four or six incisors in the upper jaw, converging; six in the lower jaw, projecting; two canines in the upper and two in the lower jaw, very long; fourteen molars in each jaw; the snout prominent, truncate, and containing a peculiar bone; feet, cloven. In their taste, hogs discover a strange degree of caprice; for whilst they are singularly delicate in their choice of herbs, they will devour with voracity the most nauseous and putrid carrion.——The Wild Boar, from which most of our domestic varieties are derived, is found in most parts of Europe and Asia, and is by no means so filthy or stupid an animal as the tame hog. His snout is longer, his ears shorter; he roots up the ground in a different manner, ploughing it up in furrows; his tusks are larger, some of them being ten inches in length, bent circularly, and exceedingly

THOUGH SO MANY OF THE HABITS OF THE HOG ARE UNCLEANLY, NO ANIMAL IS MORE CAREFUL TO HAVE ITS BED CLEAN AND DRY.



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FROM ITS RETAINING ITS FOLIAGE DURING THE WINTER, THE HOLLY IS A VERY DESIRABLE TREE FOR ORNAMENTAL PLANTING.

sharp at the points. For the first three years of his life he follows the sow, the whole litter living in a herd together; but when he has attained his full size and strength, he ranges the forest alone, dreading no single creature, not even man himself. Hunting this animal has always been a favourite amusement. When he is roused, he goes slowly and uniformly forward, frequently stopping and facing his pursuers, often inflicting severe and mortal wounds. He is at last dispatched by the hunters, either with fire-arms or spears.

HOGS'HEAD, a measure of capacity, containing 52½ imperial gallons. It is equal to half a pipe.

HOLD, in ships, the whole interior or cavity in the belly of a vessel, which is either the *after-hold*, the *fore-hold*, or the *main-hold*, according to its situation.

HOLERACEÆ, the twelfth Linnæan order of plants, containing trees, shrubs, perennial and annual herbs, as rhubarb, beet, &c.

HO'LINESS, a title of quality given to the pope, who is styled, "your holiness," or, "holy father:" in Latin, *sanctissime*, or *beatissime pater*.

HOL'LY, in botany, a beautiful evergreen tree, of the genus *Ilex*, of several species. The common holly grows from 20 to 30 feet high; the stem by age becomes large, and is covered with a grayish smooth bark, and set with branches which form a sort of cone. The leaves are of a bright green on the upper surface, but pale beneath; the edges indented and waved, with sharp prickles at the points. The flowers grow in clusters, and are succeeded by roundish berries, which turn to a bright red about Michaelmas. The timber of holly is the whitest of all hard wood, and therefore used by inlayers: it is also used by millwrights, turners, &c. Its name is a supposed corruption from *holy*, as Dr. Turner, our earliest writer on plants, calls it holy and holy-tree; which appellation was given it, most probably, from its being used in holy places. It has a great variety of names in Germany; amongst which is *Christdorn*; in Danish it is also called *Christhorn*; and in Swedish *Christtorn*, amongst other appellations: from whence it appears that it is considered a holy plant by certain classes in those countries.——*Knee-holly*, a plant, the butcher's broom, of the genus *Ruscus*.——*Sea-holly*, a plant, of the genus *Eryngium*.

HOL'LYHOCK, in botany, the *Althea rosea*, a hardy flowering plant, a native of the East, and very frequently cultivated in our gardens. The root is biennial, and shoots up one or several very upright hairy stems, from five to eight feet in height, bearing large and beautiful flowers.

HOL'OCAUST, a burnt offering or sacrifice, wholly consumed by fire: of this kind was the daily sacrifice in the Jewish church. This was done by way of acknowledgment, that the person offering, and all that belonged to him, were the effects of the divine bounty. The pagan nations, who also offered holocausts, probably considered them in the same light.

HOL'OGRAPH, a deed or testament wholly written by the hand of the testator.

HOLOM'ETER, an instrument for taking all kinds of measures, both on the earth and in the heavens.

HOLY ALLI'ANCE. A religious feeling had long prevailed among the nations of the continent, that their preceding sufferings, arising from the horrors of war and invasion, were the direct consequences of the French revolution, which they looked upon as a punishment inflicted upon the world for its impiety. After the fall of Napoleon, this religious feeling still remained strong in their minds, and they were induced to believe, that religion might be made the basis of international politics. Participating in this spirit, and being desirous to become the pacificator of Europe, the emperor Alexander of Russia applied to the emperor of Austria and the king of Prussia to join him in establishing an alliance for the promotion of this glorious object. To his request these monarchs readily acceded. The document which Alexander had drawn up, and sent to them in his own hand-writing, consisted in a declaration, that, in accordance with the precepts of the gospel of Jesus Christ, the principles of justice, charity, and peace should be the basis of their internal administration, and of their international relations, and that the happiness and religious welfare of their subjects should be their great object. It was also stipulated that the three sovereigns should invite others to become members of the Holy Alliance; and, in the sequel, all the European sovereigns, except the pope, became members of it. Never, perhaps, was a royal league so extravagantly lauded, or so furiously denounced. Its panegyrists looked forward to the permanent repose of nations, and the establishment of rational freedom, in lieu of anarchy, violence, and bloodshed; while its opponents watched its progress with mistrust and jealousy, believing that the union of crowned heads could tend to nothing short of universal despotism. It is not our province in this place to detail the events which subsequently took place: they belong to the history of nations. But we may observe, that as the views of the Holy Alliance became more developed, Great Britain thought proper to accede from it; and many circumstances have since proved, that this union of crowned heads has not only failed to secure the important benefits which it promised for the people, but that the monarchs themselves have been compelled to abandon some of their own extravagant pretensions to legitimate stability.

HO'LY-ROOD DAY, a festival observed by Roman Catholics in memory of the exaltation of our Saviour's cross.

HO'LY-THURS'DAY, the day on which the ascension of our Saviour is commemorated, ten days before Whitsuntide.

HO'LY-WATER, in the Roman Catholic

AMONG THE ROMANS IT WAS CUSTOMARY TO SEND BOUGHS OF HOLLY TO FRIENDS, WITH NEW YEAR'S GIFTS, AS EMBLEMATICAL OF GOOD WISHES.



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and Greek churches, water which has been consecrated by prayers, exorcisms, and other ceremonies, to sprinkle the faithful and things used for the church. It is contained in a particular kind of vases, at the doors of churches, and also within them at certain places, from which the Catholics sprinkle themselves before prayer. The Protestants renounce the use of holy-water, probably from a fear that it would be considered, like amulets or relics, as something efficacious in itself, without the repentance commanded by the church.

HOLY-WEEK, the week before Easter, in which the passion of our Saviour is commemorated.

HOMAGE, in law, the oath of submission and loyalty, which the tenant, under the feudal system, used to take to his lord when first admitted to his land.

HOMERIC, pertaining to Homer, the great poet of Greece, or to his poetry.

HOMICIDE, in law, the killing of one human being by another. It is of three kinds, *justifiable*, *excusable*, or *felonious*; *justifiable*, when it proceeds from unavoidable necessity, without an intention to kill, and without negligence; *excusable*, when it happens from misadventure, or in self-defence; *felonious*, when it proceeds from malice, or is done in the prosecution of some unlawful act, or in a sudden passion. Homicide committed with pre-meditated malice, is *murder*. Suicide also, or self-murder, is felonious homicide.——The lines of distinction between felonious and excusable or justifiable homicide, and between manslaughter and murder, are, in many cases, difficult to define with precision. But, in general, the accused has the advantage of any uncertainty or obscurity that may hang over his case, since the presumptions of law are usually in his favour.

HOMILY, a sermon or discourse upon some point of religion, delivered in a plain manner, so as to be easily understood by the common people. In the primitive church, homily rather meant a conference or conversation by way of question and answer, which made part of the office of a bishop, till the fifth century, when the learned priests were allowed to preach, catechize, &c. in the same manner as the bishops used to do. There are still extant several fine homilies, composed by the ancient fathers.——*Homiletic or pastoral theology*, a branch of practical theology, which teaches the manner in which ministers of the gospel should adapt their discourses to the capacities of their hearers, and pursue the best methods of instructing them by their doctrines and examples.

HOMŒOPATHY, a paradoxical, if not empirical, invention of a German physician, named Hahnemann, first promulgated in 1824; by which he, and the Homœopathists who subscribe to his doctrine, profess to cure diseases by such remedies as would cause similar diseases in healthy persons. The fundamental principle of this system is, therefore, *similia similibus curantur*. In the conviction that every disease carries with it a great susceptibility for the proper medicine, and that the power of medicine increases by minute division, the homœopathist gives but one drug at a time, and does not administer another dose, or a new medicine, until the former has taken effect.

HOMOGE'NEOUS, or HOMOGE'NEAL, an appellation given to things, the elements of which are of similar nature and properties.——*Homogeneous light*, that whereof the rays are all of one colour and degree of refrangibility, without any mixture of others.——*Homogeneous surds*, in mathematics, those which have the same radical character or signs.

HOMOLOGOUS, in geometry, an appellation given to the corresponding sides and angles of similar figures, as being proportional to each other.

HONEY, a saccharine substance, collected by bees from the flowers of various plants, and deposited in their comb. The honey is extracted either by expression, or by placing the comb in a warm situation, when it liquifies and comes away in a pure state. The best honey is of a thick consistence and a whitish colour, inclining to yellow, and of an agreeable smell and taste: but both the colour and flavour are said to differ, according to the plants from which it has been collected. Honey appears to consist of vegetable juices, either oozing with a portion of their essential oil from flowers, or previously collected from the leaves and branches of trees by vine-fretters, and then known by the name of honey-dew. These juices the bees transport by means of their proboscides, and, after giving them a certain preparation, probably in their stomachs, deposit them in their cells. That the juices do undergo some preparation, appears almost undeniable, since the honey wrought by young bees is white, and more pure than that produced by old. The former is called *virgin honey*. It is a softening and slightly aperient remedy: mixed with vinegar it forms *oxymel*, and is used in various forms in medicine and pharmacy. It is particularly recommended to the asthmatic, and those subject to the gravel, from its detergent nature. It is well worthy of observation, that bees frequent many plants and flowers which have poisonous juices; and it is supposed, by a peculiar power of analysis, they extract that portion of the fluid only which is not deleterious, and consequently reject that which would be fatal to life. Dr. Barton, in the American Philosophical Transactions, states, that the bees partake of these poisonous syrups without injury. He enumerates among the plants which contain them, dwarf laurel, great laurel, kalmia, latifolia, broad-leaved moor-wort, Pennsylvania mountain laurel, wild honeysuckle, and the stramonium.

HONEY-COMB, a waxen substance, of a firm, close texture, formed by bees into hexagonal cells, to deposit their honey and eggs in. These cells are constructed with geometrical accuracy, and arranged in two



THE ANCIENT PALACE OF HOLYROOD, EDINBURGH, IS A LARGE QUADRANGULAR BUILDING OF HEWN STONE; BUT IS NOW ENTIRELY IN RUINS.

THERE ARE STILL EXTANT SEVERAL FINE HOMILIES, COMPOSED BY THE ANCIENT FATHERS, PARTICULARLY ST. CHRYSOSTOM AND ST. GREGORY.

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layers, placed end to end, the openings of the different layers being in opposite directions. The comb is placed vertically; the cells, therefore, are horizontal. The distance of the different cakes of comb from each other is sufficient for two bees to pass readily between them, and they are here and there pierced with passages affording a communication between all parts of the hive. The sides of the cells are all much thinner than the finest paper; and yet they are so strengthened by their arrangement, that they are able to resist all the motions of the bee within them. In fact, the construction of the cells is such as to afford the greatest possible number in a given space, with the least possible expenditure of material.

HON'EY-DEW, a sort of saccharine substance, found early in the morning on plants, flowers, &c. There are two kinds of honey-dew, the one produced by transpiration, during a sultry heat, from the leaves of particular kinds of trees: the other is the excrement of a small insect known by the name of *puceron*, or *vine fretter*.

HON'EY LOCUST, in botany, a lofty and beautiful tree, of the genus *Gleditsia*, growing in the vicinity of the Alleghany mountains. The leaves are pinnated, divided into numerous small leaflets, which give a light and very elegant appearance to the foliage; and its large brown seeds are contained in a pod, the pulp of which is extremely sweet. The tree is especially remarkable for its formidable branching thorns, which frequently grow to the length of several inches.

HON'EY-STONE, a mineral of a yellowish or reddish colour, crystalizing in octahedrons with a square base. It is harder than gypsum, very brittle, and burns at the flame of the blow-pipe. The honey-stone, like amber, belongs to the geological formation of lignites.

HON'EYSUCKLE, or WOOD'BINE, in botany, a genus of plants, the *Lonicera*, of many species. Honeysuckles are cultivated for the beauty and delightful fragrance of their flowers; and there is not a plant among the numerous exotics which grace our conservatories, that excels this hardy and familiar shrub.

HONG, the Chinese name for an European factory. *The Hong merchants*, of whom there are about a dozen, reside at Canton, and are responsible for the conduct of the Europeans, with whom they deal.

HON'OUR, a testimony of esteem or submission, expressed by words, actions, and an exterior behaviour by which we make known the veneration and respect we entertain for any one, on account of his dignity or merit. The word *honour* is also used in general for the esteem due to virtue, glory, and reputation. It moreover means, that dignified respect for character, which springs from principle or moral rectitude, and which is a distinguishing trait in the character of good men. It is also used for virtue and probity themselves, and for an exactness in performing whatever we have promised: and in this last sense we use the term, *a man of honour*. But honour is more particularly applied to two different kinds of virtue, bravery in men, and chastity in women. Virtue and honour were deified among the Greeks and Romans, and had a joint temple consecrated to them at Rome; but afterwards they had separate temples, which were so placed, that no one could enter the temple of Honour, without passing through that of Virtue; by which the Romans were continually put in mind, that virtue is the only direct path to true glory.——*Honour*, in law, a superior seignory, to which other lordships and manors owe suit and service, and which, itself, holds of the king only.——*Honours of War*, honourable terms granted to a vanquished enemy, when he is permitted to march out of a town with all the insignia of military honours.——*Laws of Honour*, among persons of fashion, signify certain rules by which their social intercourse is regulated, and which are founded on a regard to reputation. These laws require a punctilious attention to decorum in external deportment, but often lead to the most flagrant violations of moral duty.——*Court of honour*, an ancient court of civil and criminal jurisdiction, having power to redress injuries of honour, and to hold pleas respecting matters of arms and deeds of war.

HON'OURABLE, a title of quality attributed to the younger children of earls, and the children of viscounts and barons; to persons enjoying places of trust and honour; and, collectively, to the house of commons, and to the East-India company. Also, an epithet of respect or distinction; as, "the honourable gentleman."

HOOP'ING-COUGH, a disease marked by a convulsive, strangulating cough, in which the patient whoops, with a deep inspiration of breath. Children are most commonly the subjects of this disease, and it seems to depend on a specific contagion, which affects them but once in their life.

HOOP'OE, in ornithology, a beautiful crested bird, seldom seen in England, but common in Gibraltar, where it is called the Marsh-cock.

HOP, in botany, the *Humulus lupulus*, a climbing plant, which is of great importance in brewing, as it tends to preserve malt liquors, and renders them more aperient, diuretic, and salubrious. The root is perennial, giving out several herbaceous, rough, twining stems; the fruit is a sort of cone, composed of membraneous scales, each of which envelopes a single seed. These cones are the object for which it is so extensively cultivated, and their principal use is to communicate to beer its strengthening quality, to prevent it from turning sour, and to impart to it an agreeable aromatic bitter. Hops are said to have been introduced into England from the Netherlands in the sixteenth century; and their cultivation is especially attended to in the counties of Kent, Surrey, Sussex, Worcester, and Hereford. They are planted



IN A HONEYCOMB, THE BASE OF EACH CELL IS COMPOSED OF THREE RHOMBOIDAL PIECES, PLACED SO AS TO FORM A CONCAVE PYRAMID.

PLUTARCH INFORMS US THAT THE ROMANS, CONTRARY TO THEIR USUAL CUSTOM, SACRIFICED TO HONOUR WITH THE HEAD UNCOVERED.

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in hills about eight or nine feet asunder. About the beginning of July hops begin to blow, and are ready to gather about the latter end of August; when, by their strong scent, their hardiness, and the brown colour of the seed, they may be known to be fit. The best method of drying hops is on a kiln over a charcoal fire; when the stalks are brittle, and the top leaves easily fall off, they are properly dried. When taken from the kiln, they should be laid to cool for three weeks or a month before they are bagged. The whole process, from the time of planting to the preparation for the purposes of commerce, requires much experience and many precautions. The crops even are excessively variable, often in a tenfold proportion in different seasons and situations. The excellence of hops is tested by the clammy feeling of the powder contained in the cones. The brighter the colour of the hops, the greater is the estimation in which they are held. One of the most active ingredients of the hop is a narcotic essential oil, and which gives the flower its peculiar smell: nay, its narcotic qualities were at one time so highly esteemed, that a pillow of hops was commonly recommended to procure sleep, when all other remedies had failed. The other properties of the hop are a yellow resin, and a bitter principle possessed of peculiar medicinal qualities, which chemists call *lupulin*.

HOP'LITÆ, in antiquity, heavy-armed soldiers among the Greeks, who were of the first and principal class.

HOP'PER, a kind of basket, in which seed-corn is carried at the time of sowing. Also, the wooden trough, in a mill, into which the corn is put to be ground.

HO'RARY CIRCLE *of a globe*, is fixed upon the brazen meridian divided into 24 hours, having an index moveable round the axis of the globe, which upon turning the globe 15 degrees, will shew what places have the sun an hour before or after us: and will also point out the hour of the day or night all over the world at any given moment.—*Horary motion of the earth*, the arch it describes in an hour, which is nearly 15 degrees. Hence in reducing motion into time, if 15° is equal to 1 hour, 1° is equal to 4'; therefore the clocks at places 15° East of London are an hour faster than those of London, and the clocks at places, 15° West of London, are one hour later than those of London.

HORDE, a company of wandering people, who have no settled habitation, but stroll about, dwelling under tents, to be ready to shift, as soon as the provisions of the place fail them.

HORI'ZON, in astronomy, the line that terminates the view, or that great circle which divides the heavens and the earth into two equal parts or hemispheres, distinguishing the upper from the lower. The horizon is either sensible or rational: the *sensible* horizon is that circle which limits our prospect. The *rational* horizon is a great circle of the apparent celestial sphere, dividing it into two equal hemispheres, and serving as the limits of the elevation or depression of celestial objects.—*Artificial* or *painter's horizon*. In every picture the *artificial eye*, or *point of sight*, is supposed to be at a certain height from the base line; as high as a human figure would be, represented as standing there. To this point every thing in the picture tends, as every thing in a *real* view tends to the *natural* eye. The picture then, as far as this circumstance is concerned, is perfect, if the *artificial eye* and the *artificial horizon* go together; for these always bear the same relation to each other, wherever the picture may be placed.

HORN, in physiology, a hard, semi-transparent substance growing on the heads of several animals, and serving them as weapons of defence. The horn of an animal is of the same nature as its gelatinous matter; and is only that matter charged with a less quantity of water, and a larger one of earth, and sufficiently condensed to be of a solid consistence. It is mostly composed of albumen, gelatin, and phosphate of lime, but the horns of the buck and stag are of an intermediate nature between horn and bone. Horn is soft, tough, semi-transparent, and susceptible of being cut into a great variety of forms: these properties render it an article of considerable value in the hands of the turner and other manufacturers, for combs, snuff-boxes, knife handles, lanthorns, &c.

HORN'BILL, in ornithology, a fowl of the genus *Buceros*, which has a flat bony forehead, with two horns. It is a native of the East Indies.

HORN'BLENDE (called by Hauy *amphibole*), in mineralogy, a sort of slaty stone, of a green and blackish green colour, found in great abundance in many parts of Great Britain and elsewhere. It is very remarkable on account of the various forms and compositions of its crystals and crystaline particles, and of its exceedingly diversified colours, thus giving rise to almost numberless varieties, many of which have obtained distinct appellations.

HOR'NET, a large, strong, and stinging insect, of the genus *Vespa*, or wasp kind. This insect constructs a nest of leaves, &c., which it attaches to the branches of trees, and is often as large as a man's hat.

HORN'ORE, in mineralogy, one of the species of silver ore.

HORN'PIPE, an animated sort of dance. Also, a musical instrument in Wales.

HORN'SILVER, a white or brownish mineral, insoluble in water, and though fusible at the blowpipe, with difficulty reducible by it. In Peru, Mexico, and other parts of South America, it is found abundantly mixed with veins of metallic silver.

HORN'STONE, in mineralogy, a siliceous stone, a sub-species of quartz. Its geological locality is remarkable, for it occurs in both ancient and recent formations. The hornstone which occurs in secondary limestone is called *chert* by the English miners.

HORN'WORK, in fortification, an out-





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work which advances towards the field, and is composed of two demi-bastions joined by a curtain.

HOROL'OGY, that branch of science which enables us to measure the portions of time as they pass. We judge of the lapse of time by the succession of sensible events, and the most convenient and accurate measures of its quantity are derived from motions, which are either uniform, or repeated at equal intervals. Of the *former* kind the rotation of the earth on its axis is the most exact, and the situation of the earth with respect to the fixed stars, or sun, constitutes the means for determining the parts of time as they follow each other. Of the *latter* kind the rotation of machinery consisting of wheel-work, moved by a weight or spring, and regulated by a pendulum or balance, affords instruments of which the utility is well known. The term horology is at present confined to the principles on which the art of making clocks and watches is established.

HOROM'ETRY, the art or practice of measuring time by hours and subordinate divisions.

HOROPTER, in optics, a right line drawn through the point where the two optic axes meet, parallel to that which joins the two pupils.

HOR'OSCOPE, in astrology, the degree or point of the horizon rising above the eastern point of the horizon at any given time, when a prediction was to be made of a future event. Also a scheme or figure of the twelve houses, or twelve signs of the zodiac.

HORSE, in zoology, *Equus caballus*, a domestic quadruped, that excels all others in beauty and usefulness. He is characterised by having six erect and parallel fore-teeth in the upper jaw, and six somewhat prominent in the under jaw; the dog-teeth are solitary, and the feet consist of an undivided hoof. The most esteemed breeds of horses are, the Barbary or Arabian horses, remarkable for their fleetness; the English racehorse and hunter, which combine beauty with swiftness; and the English draught-horses, which are distinguished for their size and strength, &c. In Africa horses still maintain their original independence, and range at pleasure in herds of several hundreds, having always one or more as an advanced guard, to give an alarm against the approach of danger. The notice is expressed by a sudden snorting, at which the main body gallops off with the most surprising swiftness. In Arabia almost every man possesses his horse, which lives in the same apartment with himself and family, and is considered as constituting an important part of it. It is fed with the most regular attention, is cleaned with an incessant assiduity, and is never, on any account, ill-treated. An Arab occasionally appears to carry on a conversational intercourse with his horse, and his attachment to the animal excites in return a corresponding affection. Bishop Heber says, his Arab horse had "almost as much attachment and as coaxing ways as a dog. This seems the general character of the Arab horse. It is not the fiery dashing animal I had supposed, but with more rationality about him, and more apparent confidence in him, than the majority of English horses." In no country of the globe, however, has the breed of horses been more attended to than in Great Britain; nor are they excelled in swiftness or beauty by the coursers of Barbary or Arabia; and in supporting fatigue is much superior to either. But by the absurd practice of running our race-horses at two or three years old, working others long before their limbs are knit, or their strength come, and cruelly exacting from them services far beyond their powers, their usefulness is soon destroyed, and their lives materially shortened.—The age of a horse under eight years old is mostly to be known by his teeth. The horse has twenty-four grinders; four tushes, or single teeth; and twelve front teeth, or gatherers. Mares in general have no tushes. The black marks, or cavities denoting the age, are to be found in the corner front teeth, adjoining the tushes. At four years and a half old, the mark teeth are just visible above the gum, and the cavity is distinctly to be seen. At five, the remaining colt's teeth are shed, and the tushes appear. At six, the tushes are up, and appear white, small, and sharp, with a small circle of flesh growing near them; the horse's mouth is then completed, the corner teeth being filled up. At eight, the black marks disappear. It is computed that there are a million and a half of horses employed, for various purposes of utility and pleasure, in Great Britain, which are probably worth twenty-two millions sterling. Cuvier says, "it may safely be asserted, that more horses are consumed in England, in every ten years, than in any other country in the world in ten times that period, except those which perish in war."

HORSE, in military affairs, a body of cavalry.——In the marine, a name for two different ropes in the vessel, namely, one extending from the middle of a yard to its arms; another extended perpendicularly near the mast.——*Horse*, in printing, the sloping bench standing on the *bank*, or table, on which the presamen set the heaps of paper before each sheet is placed on that part of the press called the *tympan*.

HORSE POWER. A horse draws to the greatest advantage when the line of draught inclines a little upwards. Desaguliers and Smeaton consider the force of one horse equal to that of five men, but writers differ on this subject. The measure of a horse's power, as the standard of the power of machinery given by Mr. Watt, is, that he can raise a weight of 32,000 pounds to the height of one foot in a minute. His power of draught or carriage, of course, diminishes as his speed increases. The proportion of diminution, according to professor Leslie, is as follows: If we represent his force when moving at the rate of 2 miles an hour by

BY THE EXPRESSIVE MOTION OF A HORSE'S EARS, AN ATTENTIVE OBSERVER MAY TELL ALMOST ALL THE ANIMAL MEANS.

AS A HORSE GROWS OLD THE CONVEXITY OF HIS EYE IS LESSENED, WHICH RENDERS THE VISION IMPERFECT, AND CAUSES HIM TO SHY.



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the number 100, his force at three miles per hour will be 31; at 4 miles, 64; at 5 miles, 49; and at 6 miles, 36.

HORSE-RACING, a diversion more used in England than in any other country in the world. Race-horses should be as light as possible, large, long, and well shaped, nervous, of high mettle, and good wind, with small legs, and neat small shaped feet. It is supposed that horse-racing was practised by the Anglo-Saxons, because when Hugh, the head of the house of the Capets, afterwards monarchs of France, solicited the hand of Edelswitha, the sister of Athelstan, he sent to that prince, among other valuable presents, several "running horses," with their saddles and their bridles, the latter embellished with bits of yellow gold. We have, however, certain information, that it was known in England in the reign of Henry II., and that it became a general and national amusement in the time of James I., when the first Arabian was purchased by the king for 500*l*. The most memorable instances of the fleetness of horses, are those of Eclipse and Childers; the former having run four miles in eight minutes, carrying 12 stone weight, and the latter, four miles in six minutes 48 seconds, carrying 9 stone 2 lbs. weight.——Horse-races were common amongst the Greeks and Romans; and the place where they ran or breathed their coursers, was called the Hippodrome, [which see.]

HORSESHOE, in amithery, a circular plate of iron fitted to the foot of a horse. This shoe is sometimes turned up in the winter season, to prevent the horse from slipping, which is called rough-shoeing.—— *Horse shoe*, in fortification, is a small work sometimes of a round and sometimes of an oval figure, inclosed with a parapet, sometimes raised in the moat or ditch, or in low grounds, and sometimes to cover a gate, or to serve as a lodgment for soldiers.

HORSE-TAIL, in botany, a plant of the genus *Equisetum*. There is another kind, called the shrubby horse-tail, which is of the genus *Ephedra*.

HORTICULTURE, the art of cultivating a garden, and rearing the finest kinds of plants. Within the last half century great improvements have been effected in all that relates to horticulture. That accomplished artist, Kent, led the way. According to lord Walpole, he was painter enough to taste the charms of landscape, sufficiently bold and opinionative to dare and to dictate, and born with a genius to strike out a great system from the twilight of imperfect essays. He leaped the fence, and saw that all nature was a garden. The great principles on which he worked were perspective, light, and shade. Groups of trees broke a too extensive lawn; evergreens and wood were opposed to the glare of the champaign, and, by selecting favourite objects, and veiling deformities, he realized the compositions of the great masters in painting. Men of taste and genius, not only in England, but on the continent, followed in his path; and British gardening became the designation for all that was beautiful in that pleasing art—the synonyme of perfection in rural culture. Only thirty years have elapsed since the London horticultural society was established, and there are now more than fifty similar institutions in Great Britain, which still maintains the first rank in the art; though France, with a laudable emulation, has made great efforts to rival her.—The natural divisions of horticulture are the esculent or kitchen garden, seminary, nursery, fruit trees and vines, flower garden, green-houses, *arboretum* of ornamental trees and shrubs, the botanical and medical gardening, and landscape or picturesque gardening. Each of these departments requires to be separately studied before it can be managed so as to combine utility and comfort with ornament and recreation. To accomplish this on a large scale, artists, scientific professors, and intelligent and experienced practical superintendants, are necessarily employed.

HORTUS SICCUS. [See Herbarium.]

HOSANNA, was a form of supplication amongst the Hebrews, signifying *save, I beseech you*, or *help him God!* This acclamation was so much used at the feast of tabernacles, that the solemnity was called *Hosanna rabba*. It was used at the inauguration of Kings to express their good wishes for the prosperity of their princes. At the feast of tabernacles it was continually echoed, both as expressive of gratitude for former deliverances, and of their joyful expectation of a future one by the Messiah.

HOSE, among mariners, a leathern pipe for conveying water from the main decks into the casks. Also, a leathern pipe, used with fire-engines, for conveying water to extinguish fires.

HOSEA, a canonical book of the Old Testament, and the first of the minor prophets. His prophecies are chiefly directed to the ten tribes before their captivity, threatening them with destruction in case of disobedience, but comforting the pious with the promise of the Messiah, and of the happy state of the church in the latter days.

HOSIERY, stockings, and other goods in a shop that are spun and wove.

HOSPITAL, a place or building properly endowed, or otherwise supported by charitable contributions, for the reception and support of the poor, aged, infirm, sick, or helpless. Also, a house for the reception of disabled seamen or soldiers, foundlings, &c., who are supported by public or private charity, as well as for pauper lunatics, infected persons, &c.—Hospitals for the sick and wounded, and also those for the poor and infirm were wholly unknown among the ancients. In Sparta, where all the citizens ate together, there was no institution for the sick. In Rome, neither under the consuls nor emperors did they ever think of making any provision for the infirm or the poor. The first establishment of hospitals must be ascribed to Christiana. After the establishment of Christianity, the emperors

IN RIDING, THE HANDS AND LEGS OF THE RIDER OUGHT TO ACT IN CORRESPONDENCE WITH EACH OTHER IN EVERYTHING.

A HORSE SHOULD BE TAUGHT TO LEAP BY DEGREES, BEGINNING WITH LOW AND SMALL LEAPS, AND AUGMENTING THEM GRADUALLY.



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WHEN CHURCHES FIRST HAD FIXED REVENUES, ONE FOURTH WAS FOR THE POOR; HENCE THE ORIGIN OF HOSPITALS, OR HOUSES OF CHARITY.

at Constantinople built many hospitals for poor infants, the aged, orphans, and strangers. Piety impelled many individuals to appropriate a part of their funds to religious and charitable purposes; and this good example being followed, from patriotic and benevolent motives, hospitals of various kinds were founded in most of the civilized nations of Europe.—The great advantages arising to the public from well regulated hospitals can be easily understood and appreciated. To the forlorn and destitute poor they are a blessed retreat in the hour of calamity and need; while they afford an admirable opportunity for the improvement and acquisition of surgical and medical advice. And it is with sincere pleasure we are enabled to add, that the tide of public charity, continually augmenting, flows in numerous health-restoring channels, not only in the metropolis, but throughout the entire kingdom.

HOSPITALLERS, an order of religious knights, who built a hospital at Jerusalem for pilgrims. They are now known by the title of knights of Malta.

HOSPI'TIUM, a term used in old writers either for an inn or a monastery, built for the reception of strangers and travellers. In the more early ages of the world, before public inns were thought of, persons who travelled lodged in private houses, and were obliged, if need required, to return the favour to those that entertained them. This was the occasion of the most intimate friendship betwixt the parties, insomuch that they treated one another as relations. Hence the word *hospitium*, which properly signifies lodging or entertainment at the house of another, is used for friendship, founded upon the basis of hospitality.

HOSPODAR, a title borne by the princes of Wallachia and Moldavia, who receive the investiture of their principalities from the grand seignior. He gives them a vest and standard: they are under his protection, and obliged to serve him, and he even sometimes deposes them; but in other respects they are absolute sovereigns within their own dominions.

HOST, in church history, a contraction of *hostia* a Latin word, signifying a victim, or sacrifice offered to the Deity. In a general sense, the term is used to Jesus Christ, as an *hostitia* offered to the Father for the sins of mankind.—In the church of Rome, the *host* is the consecrated wafer used in the sacrament of the Eucharist; which wafer, or bread, being transubstantiated, as is taught, into the real body and blood of Christ, is in that rite offered up a sacrifice anew.

HOSTAGE, a person given up to an enemy as a security for the performance of the articles of a treaty; on the performance of which the person is to be released.

HOT'HOUSE, a building, constructed in a garden, for the rearing of exotics and tender plants that require heat, as well as for the early ripening of fruit.——*Hotbed*, a bed of earth with horse-dung, or other manure, covered with glass; intended to raise early plants or nourish such as will not thrive in cool air.

HOTTE, a basket of wicker work, much used in France, for carrying burthens on the back. It is slung over the arms by means of straps, and great weights are thus carried with much facility.

HOTTENTOTS, natives of the southern extremity of Africa; a race of people whose appearance, habits, and general ignorance, show in the most striking manner to what a degraded condition mankind may be reduced, when wholly destitute of the blessings of civilization.

HOUND, a dog used in the chase, with long, smooth, pendulous ears. The bloodhound appears to have been the origin of the other sub-varieties, the principal of which are the foxhound, harrier, and beagle. England excels all other countries in her breed of hounds, not only from the climate being congenial to them, but also from the great attention paid to their breeding and management.

HOUR, a space of time equal to one twenty-fourth part of a day and night, and consisting of 60 minutes, each minute being 60 seconds.—The ancient *Hebrews* did not divide their day into hours. Their division of the day was into four parts, morning, high day or noon, the first evening, and the last evening; and their night was divided into three parts, night, midnight, and the morning watch. But afterwards they adopted the manner of the *Greeks* and *Romans*, who divided the day, *i. e.* the space of time from sun rising till sun-set, into twelve equal parts, which consequently differed in length, at the different seasons of the year, though still equal to each other. [See DAY.]

HOUR'GLASS, a chronometer or instrument that measures time by the running of sand from one part of a glass to another, through a small aperture.

HOU'RIS, virgins in Mohammed's paradise, who, according to the description of them in the Koran, surpass in voluptuous beauty all that the imagination of mortals can conceive. They are accordingly destined to be one of the rewards of the blest.

HOUSE, in its primary sense, signifies any building or edifice designed or appropriated for the habitation of man.——*House*, among genealogists, a noble family, or an illustrious race, descended from the same stock; as the house of Austria; the house of Hanover.——When speaking of a body of men united in their legislative capacity, and holding their place by right or by election, we also use the word *house*; as the house of lords or the house of commons.——*House*, in astrology, the twelfth part of the heavens. The division of the heavens into houses, is founded upon the pretended influence of the stars, when meeting in them, in all sublunary bodies. These influences are supposed to be good or bad, and to each of these houses particular virtues are assigned, on which astrologers prepare and form a judgment of their horoscopes. The horizon and meridian are

BY THE KIND TREATMENT OF THE MORAVIAN MISSIONARIES, THE HOTTENTOTS HAVE BEEN SHOWN TO BE CAPABLE OF CIVILIZATION.



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two circles of the celestial houses, which divide the heavens into four equal parts, each containing three houses; six of which are above the horison, and six below it: and six of these are called eastern, and six western houses.

HOU'SE-BREAKING, in law, the breaking open and entering of a house by daylight, with the intent to commit a felony. The same crime committed at night is denominated a *burglary*.

HOU'SEHOLD, the whole of a family considered collectively, including the mistress, children, and servants. But the household of a sovereign prince includes only the officers and domestics belonging to his palace.

HOU'SELEEK, in botany, *Sempervivum tectorum*, a plant with a perennial root, that grows on the roofs of houses or the tops of walls.

HOW'ITZER, a kind of mortar, mounted upon a carriage like a gun. The howitzer is used to throw grenades, case-shot, and sometimes fire-balls: their principal use, however, is in the discharge of grenades.

HOY, a small vessel for carrying passengers from one place to another.

HUE AND CRY, in law, the common law process of pursuing a felon. The original signification of the phrase evidently was, that the offender should be pursued with a loud outcry, in order that all might hear and be induced to join in the pursuit.

HUER, a name given to certain fountains in Iceland of a most extraordinary nature, forming at times *jets d'eau* of scalding water of ninety feet in height and thirty in diameter, creating one of the most magnificent sights that can be conceived. The playing of these stupendous spouts is foretold by noises roaring like the cataract of Niagara. The largest is called Geyser; it is situated in a plain rising into small hills, in the midst of an amphitheatre bounded by the most magnificent and various shaped icy mountains, among which Hecla soars pre-eminent. Huers are not confined to the land; but sometimes rise in the sea, and form scalding waters amidst the waves.

HU'GUENOT, a French word used after the year 1560, as an appellation for a Protestant. Its origin, and consequently its *literal* meaning, has received various explanations. Their history forms an important feature in the annals of persecution; but a detail of the sanguinary scenes would be altogether incompatible with the plan of this volume; we shall therefore merely remark that the religious prejudices of the people were kept alive by contending political factions, till France was nearly desolated by what was termed "religious wars;" and at length a dreadful massacre of the Huguenots took place on St. Bartholomew's day, 1572. Henry IV., 1598, protected them by the edict of Nantes; but Louis XIV., 1685, revoked this edict, in consequence of which 500,000 Huguenots fled to Switzerland, Germany, Holland, and England, where their industry and wealth found a welcome reception.

HUISSIERS, civil officers in France, whose attendance is necessary at every judicial tribunal, from that of a justice of the peace to the court of cassation. There are different degrees of them, answering in some respects to the sheriffs, clerks, and criers of our courts.

HULK, in naval architecture, the body of a vessel, or that part which is, in truth, the vessel itself; the masts, sails, and cordage, composing only the apparatus for its navigation. *Hulk* is also an old ship; so called because such ship being no longer intended for navigation, the masts are taken away. Such old vessels are employed in the business of raising sand or ballast; and the criminals that are condemned to this work in the way of punishment, are said to be condemned *to the hulks*.

HUMANITIES, a term used in schools and colleges, to signify polite literature, or grammar, rhetoric, and poetry, including the study of the ancient classics, in distinction from philosophy and science.

HUM'BLE-BEE, in entomology, the *Apis terrestris*; a large hairy black bee, whose thorax is encircled with a yellow belt. It forms its nest deep in the earth, and hovers about the flowers with a buzzing noise.

HUMECTA'TION, in pharmacy, the moistening, or preparing medicines by steeping them in water.

HU'MERUS, in anatomy, the upper part of the arm, between the scapula and elbow. The *os humeri* or *brachii*, as it is called, is articulated at one end with the scapula, and at the other to the ulna and radius. As to the motion of the *os humeri*, it is evidently the most free and extensive of that of any bone in the human body; being furnished with several flexor and extensor muscles.

HU'MITE, a mineral deriving its name from Sir Abraham Hume. It is of a reddish colour and a shining lustre, crystalized in octahedrons.

HUM'MING-BIRD, a beautiful tropical bird, of the genus *Trochilus*, the smallest species of which is scarcely an inch in length. Its chief food is the nectar of flowers, which it extracts like the bee, and it suspends its nest from an orange or citron tree, laying two white eggs, the size of a pea. From the great beauty of this bird many attempts have been made to domesticate them, but unsuccessfully, as they are exceedingly susceptible of cold, and droop and die when deprived of the animating influence of the sun's rays.

HUM'MOCK, a name given by mariners to a hillock or small eminence of land, resembling a cone, and appearing on the sea-coast of a country.

HU'MOUR, in medicine, a word much used to express the moisture or fluids of animal bodies, or a fluid in its morbid or vitiated state.——*Aqueous humour of the eye*, a transparent fluid occupying the space between the crystaline lens and the cornea, both before and behind the pupil.——*Crystaline humour* or *lens*, a small transparent solid body, occupying a middle position in the eye; being the principal instrument in

THE HUGE TRACTS OF LAND IN EUROPE WHICH WERE AFFORESTED IN FEUDAL TIMES, ARE A PROOF HOW MUCH HUNTING WAS PRACTISED.

refracting the rays of light, so as to form an image on the retina.——*Vitreous humour*, a fluid contained in the minute cells of a transparent membrane, occupying the greater part of the cavity of the eye, and all the space between the crystaline and the retina.——*Humour*, when applied in a literary sense, signifies that quality of the imagination which creates ludicrous images or representations. *Humour* is less brilliant and poignant than wit; but though it may be employed to raise mirth and render conversation pleasant, it is also often made an agreeable vehicle for satire.

HU'MORAL, in medicine, an epithet for whatever relates to the humours or fluids of the system. The *humoral pathology* is that which attributes all morbid phenomena to the disordered condition of the fluids or humours. It is opposed to the *nervous pathology*, which refers everything to the nervous energy resident in the solids, and considers diseases as arising from irregularities in their functions.

HUN'DRED, a part or division of a county, which was anciently so called from its containing a hundred families, or from its furnishing a hundred able men for the king's wars. After king Alfred divided this kingdom into counties, and gave the government of each county to a sheriff, they were divided into hundreds, of which the constable was the chief officer. By various statutes, hundreds are liable to actions for injuries sustained by riots, robberies, malicious mischiefs, &c.

HUNTING, the act or diversion of pursuing wild animals. In a rude state of society, it is one of the most important employments of mankind; in its more advanced state, it becomes an agreeable amusement, and is practised in a great variety of ways, according to the country and the description of the game. In England, the fox, the stag, and the hare, are the principal objects of the chase; on the continent of Europe, the wild boar and the wolf are added to the list. Dionysius (who lived 50 B.C.) says, that the inhabitants of the northern part of this island tilled no ground, but lived in great part upon the food they procured by hunting. Strabo, who was nearly contemporary with him, also says, that the dogs bred in Britain were highly esteemed upon the continent, on account of their excellent qualities for hunting. As early as the ninth century, it formed an essential part of the education of a young nobleman. Alfred the Great was an expert and successful hunter before he was twelve years of age. Among the tributes imposed by Athelstan, upon a victory over Constantine, king of Wales, were, "hawks and sharp scented dogs, fit for hunting of wild beasts." Edward the Confessor "took the greatest delight to follow a pack of swift hounds in pursuit of game, and to cheer them with his voice." To the passion for hunting which animated the feudal kings and nobles of Europe, the huge tracts of land which were afforested bear fearful testimony; and the writers of the time give a strong picture of the sufferings of the oppressed commonalty, under the tyrannical privileges of sport which were claimed by their masters. In the reign of Edward II., hunting was reduced to a perfect science, and rules established for the practice; these were afterwards extended by the *master of the game* belonging to Henry IV., and drawn up for the use of his son, Henry, prince of Wales, in two tracts, which are extant. Edward III., according to Froissart, while at war with France, and resident there, had with him sixty couple of stag-hounds, and as many hare-hounds, and every day hunted or hawked. Gaston, earl of Foix, a foreign nobleman, contemporary with Edward, also kept 600 dogs in his castle for hunting. The bishops and abbots of the middle ages hunted with great state, and some of them were skilful sportsmen. One of these clericals, an archbishop of York, in 1321, carried a train of 200 persons, who were maintained at the expense of the abbeys on his road, and who hunted with a pack of hounds from parish to parish!

HUR'RICANE, a most violent storm of wind, generally accompanied with thunder and lightning, and distinguished from every other kind of tempest by the indescribable force of the wind and its sudden changes. Hurricanes are most common in the West Indies, the Isle of France, and the kingdoms of Siam and China. What are called hurricanes in the more northern latitudes, are nothing more than whirlwinds, occasioned by the meeting of opposite currents. But in the real hurricane, all the elements seem to have armed themselves for the destruction of human labours and of nature herself. The velocity of the wind exceeds that of a cannon ball; corn, vines, sugar-canes, forests, houses, every thing is swept away. The hurricane of the temperate zone moves with a velocity of about sixty feet in a second; those of the torrid zone, from 150 to 300 feet in the same time. They appear to have an electric origin, and begin in various ways; sometimes a little black cloud rolls down the mountains, and suddenly unfolds itself and covers the whole horizon; at others, the storm comes on in the shape of a fiery cloud, which suddenly appears in a calm and serene sky. "The ruin and desolation accompanying a hurricane," says Dr. Mosely, in his Treatise on Tropical Diseases, "cannot be described. Like fire, its resistless force consumes everything in its track, in the most terrible and rapid manner. It is generally preceded by an awful stillness of the elements, and a closeness and a mistiness in the atmosphere, which makes the sun look red, and the stars larger. But a dreadful reverse succeeding—the sky is suddenly overcast and wild—the sea rises at once from a profound calm into mountains—the wind rages and roars like the noise of cannon—the rain descends in deluges—a dismal obscurity envelopes the earth with darkness—the superior regions appear rent with lightning and thunder—the earth often does, and always seems to

WHEN INDIA HURRICANES BEGIN IN THE SOUTH AND END IN THE EAST, AND THEY HAPPEN AT A CHANGE OF THE MOON.



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tremble—terror and consternation distract all nature—birds are carried from the woods into the ocean; and those whose element is the sea seek for refuge on land—the frightened animals in the field assemble together, and are almost suffocated by the impetuosity of the wind in searching for shelter, which, when found, serves only for destruction—the roofs of houses are carried to vast distances from their walls, which are beaten to the ground, burying their inhabitants under them—large trees are torn up by the roots, and huge branches shivered off and driven through the air in every direction, with immense velocity—every tree and shrub that withstands the shock, is stript of its boughs and foliage—plants and grass are laid flat on the earth,—luxuriant spring is changed in a moment to dreary winter. This dreadful tragedy ended, when it happens in a town, the devastation is surveyed with accumulated horror: the harbour is covered with wrecks of boats and vessels; and the shore has not a vestige of its former state remaining. Mounds of rubbish and rafters in one place, heaps of earth and trunks of trees in another, deep gullies from torrents of water, and the dead and dying bodies of men, women, and children, half buried, and scattered about, where streets but a few hours before were, present the miserable survivors with a shocking conclusion of a spectacle to be followed by famine, and, when accompanied by an earthquake, by mortal diseases."

HUS'BAND, a man contracted or affianced to a woman by marriage. The word *husband* primarily meant a farmer or cultivator, and had no relation to marriage: now, however, although the term *husbandry* is retained, the word *husband* has grown obsolete in its original sense.—Of all private contracts, that between a husband and wife is most intimately blended with the social condition of a community, and gives rise to the most numerous and important relations, rights, and duties. The first and one of the most important rights resulting from this contract, is the control, in a greater or less degree, according to the laws of different countries, which it gives to the husband of the person of the wife; and this control the English law recognizes in a manner more despotic than that of most other nations.

HUS'BANDRY, the practical part of the science of agriculture, or the business of cultivating the earth and rearing animals. Husbandry is the proper term for that which is commonly called farming; and, accordingly, in law, a man of this profession is not to be styled a farmer, but a husbandman. It includes agriculture, breeding, grazing, dairying, and every other occupation by which riches may be drawn from the superficial products of the earth. For a long time past it has been progressively rising in estimation; and the present age beholds the descendants of feudal chieftains seeking honourable renown in that pursuit which was once abandoned to the meanest of their ancestors' vassals. Late improvements in agriculture consist in the lessening the quantity of labour, by means of implements, machines, and methodical arrangements; and the ascertaining the principles of vegetation, and the operation of manures. Likewise in rearing such animals as, from their conformation, contain the greatest proportion of meat within a given weight of carcass; and such as, from the economy of their organs, will acquire the greatest quantity of flesh within a given time, and from a given quantity of pasture. [See AGRICULTURE.]

HUSSARS', the name by which certain cavalry regiments are distinguished. It is a word of Hungarian origin, and was originally given to the cavalry of that country, raised in 1458, when Mathias I. ordered the prelates and nobles to assemble, with their cavalry, in his camp. Every twenty houses were obliged to furnish a man; and thus from the Hungarian words *huss* (twenty), and *ar* (pay, was formed the name *hussar* or *usser*.

HUS'SITES, the disciples of John Huss, a Bohemian, and curate of the chapel of Bethlehem at Prague; who, about the year 1414, embraced and defended the opinion of Wickliff of England, for which he was cited before the council of Constance, and, refusing to renounce his supposed errors, he was condemned to be burnt alive, which sentence was accordingly executed upon him at Constance. This gave rise to a rebellion of the Hussites, who avenged his death by one of the fiercest and most terrible civil wars ever known.

HU'SO, a fish of the genus *Accipenser*, inhabiting the Danube and other rivers of Russia. Its mouth is in the upper part of the head, and its body is without prickles or protuberances. It grows to the length of 24 feet, and its skin is so tough, that it is used for ropes in drawing wheel carriages.

HUSTINGS, (from the Saxon word, *hustinge*, a council, or court,) a court held in the guildhalls of several English cities, as London, Westminster, Winchester, and York, by the principal officers of their respective corporations. Here, deeds may be inrolled, outlawries sued out, and replevins and writs of error determined: Here, also, the elections of officers and parliamentary representatives take place. In a popular sense, the word *hustings* is used for a place raised for the candidates at elections of members of parliament.

HUTCHINSONIANS, the defenders of the philosophy of John Hutchinson, who was born in the year 1674. Hutchinson disapproved of Woodward's theory of the earth, and of Newton's doctrine of gravity.

HY'ACINTH, in botany, a genus of plants, of several species, and a great number of varieties. The Oriental hyacinth has a large, purplish, bulbous root, from which spring several narrow, erect leaves, and a pyramidical stalk, adorned with many beautiful bell-shaped flowers, which in the different varieties are of various colours. In Holland the fondness for this plant has

amounted to a complete mania.——*Hyacinth*, in mineralogy, a genus of pellucid gems, whose colour is red with an admixture of yellow. The hyacinth, though less striking to the eye than any other red gems, is not without its beauty in the finest specimens. Its structure is foliated; its lustre, strong; its fracture, conchoidal; and it is found of various sizes, from that of a pin's head to the third of an inch in diameter. Like common crystal, it is sometimes found columnar, and sometimes in a pebble form; and is always hardest and brightest in the larger masses.

HYACINTHIA, a Grecian festival in honour of Hyacinthus, kept at Amyclæ, in the month Hecatombæon. It continued three days, on the first of which all was lamentation, and mourning, and woe; but on the second and third days they danced and sung hymns to Apollo, offered sacrifices, exhibited spectacles, treated their friends, and enjoyed themselves with much festivity.

HYÆ'NA, or HYE'NA, a fierce and voracious quadruped, of the genus *Canis*. The neck is very thick, and covered with a kind of bristles instead of hairs, which naturally stand erect, and give a very formidable appearance to the creature; the body is bulky and rounded, and the shape not unlike that of a hog; the legs are moderately long, and very strong; and the general colour is a very dusky-olive. It inhabits Turkey, Syria, Persia, and Barbary, living in caverns and rocky places, and prowling about at night to feed on the remains of dead animals. Naturalists have described three species of the hyæna, the most common being the one we denominated the *striped* hyæna. It is not very swift, but is continually lying in wait for other creatures, and scarce any thing that comes in its way escapes it.

HYBER'NACLE, in botany, the winter-quarters of a plant, that is, a bulb or a bud, in which the embryo of a future plant is enclosed by a scaly covering and protected from injuries during winter.——*Hybernation of Animals*. [See DORMANT.]

HY'BRID, an epithet for any animal whose sire is of one kind, and dam of another kind.

HYDAR'THRUS, a peculiar and dreadful disease of the joints, commonly termed the white swelling. The knee, ankle, wrist, and elbow, are the joints most subject to white swellings; but, as the name implies, the skin is not at all altered in colour. There is a great difference between that species of the disease which is called *rheumatic*, and that which is termed *scrophulous*; the latter being by far the more painful and dangerous.

HY'DATID, an animal substance, in shape like a small vesicle or bladder, and distended with an aqueous fluid, which is found in the viscera of the human body. The origin and real nature of hydatids are not fully ascertained; it is extremely probable, however, that they are a sort of imperfect animalcules. Those found in the livers of sheep are undoubtedly so, having been often seen to move when put into warm water; and they retain this power of motion many hours after a sheep has been killed.

HY'DRA, in natural history, the *Polypus*, an animal of the genus *Zoophyta*. There are five species, three of which are found in this country: of these, the principal is *Hydra viridis*, having about ten tentacles shorter than the body. It inhabits stagnant waters, and is found on the surface of plants, and appears at first sight like a little transparent green jelly. This is the appearance in the quiescent state, but when expanded, it is a linear body, fixed at one end, and surrounded at the other by tentacles or arms placed in a circle round the mouth, and generally producing its young from the sides. These, at first, seem small papillæ, increasing in length till they assume the form of the parent, and then dropping off. The whole tribe has a most wonderful faculty of re-producing parts which have been destroyed, and if cut or divided in any direction, each separate part becomes a perfect polype, as slips of certain plants become the same plants in perfect form.——*Hydra*, in astronomy, a southern constellation imagined to represent a water-serpent.——*Hydra*, a fabulous monster with many heads, that is said to have infested the lake of Lerna, in Peloponnesus. According to the fable, when one of the heads was cut off, it was immediately succeeded by another, unless the wound was cauterized. But Hercules killed this monster by applying firebrands to the wounds as he cut off the heads. Hence, when we speak of a multitude of evils, or the cause of them, we use the word *hydra*.

HY'DRAGOGUE, a medicine that possesses the quality of promoting the discharge of watery humours.

HYDRAN'GEA, in botany, a genus of plants, class 10 *Decandria*, order 2 *Digynia*. They are distinguished by their fine corymbs of light rose-coloured flowers, which retain their freshness for a long time, and succeed each other till late in the autumn.

HY'DRANT, in hydraulics, a pipe or machine with suitable valves and a spout, by which water is raised and discharged from the main conduit of an aqueduct.

HYDRAR'GYRUM, a name given to quicksilver, or mercury, on account of its liquid state. [See MERCURY.]

HY'DRATE, in chemistry, a solid which contains water in a fixed state, as slaked lime, soda, &c.

HYDRAUL'ICS, that branch of hydrostatics which teaches to estimate the velocity of moving unelastic fluids. It is this important science, that furnishes the principles upon which the engines are constructed, by which water is raised. Without it, water could not be laid into those dwellings, the bases of which are above the surface of rivers, nor could any be supplied to extinguish accidental fires. To these are to be added, pumps, steam-engines, fountains, and a variety of useful machines

THE ANCIENTS ABSURDLY BELIEVED THAT THE HYÆNA COULD IMITATE THE HUMAN VOICE, AND HAD THE POWER OF FASCINATION.

HYDROGEN AND OXYGEN DO NOT COMBINE AT ORDINARY TEMPERATURES, BUT HYDROGEN COMBINES WITH OXYGEN WHEN SET ON FIRE.



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by which the force of fluids is applied to practical purposes.——The Romans displayed their acquaintance with the art of carrying waters, in their famous aqueducts; and Frontinus, an engineer, who wrote on this subject, has given some few rules and hints on the motion of fluids. It is, however, only within the three last centuries, that this subject has attracted any particular notice.——*Hydraulic Press*, a machine of great power created by perpendicular action on a confined mass of water, which, when materials of great strength are used, produces an enormous force.——*Hydraulic Lime*, a species of lime that hardens under water.

HYDRIOD'IC, in chemistry, an epithet denoting a peculiar acid or gaseous substance, produced by the combination of hydrogen and iodine.

HYDROCAR'BONATE, in chemistry, carburetted hydrogen gas, or inflammable air.

HYDROCAR'DIA, in medicine, dropsy of the heart: a collection of fluid in the pericardium, which may be either coagulable lymph, serum, or a puriform fluid.

HYDROCEPH'ALUS, in surgery, a preternatural distention of the head, to an uncommon size, by a stagnation and extravasation of the lymph, which, when collected in the ventricles of the brain, is termed *hydrocephalus internus*; and when it is a collection of water between the membranes of the brain, it is called *hydrocephalus externus*.

HYDROCHLO'RATE, in chemistry, a compound of hydrochloric acid, or muriatic acid gas, with a base.

HYDROCYAN'IC, in chemistry, another name for Prussic acid, a most active and deadly poison.

HYDRODYNAM'ICS, the science which treats of the state and forces of liquids, at rest or in motion; of their equilibrium, cohesion, pressure, reaistance, &c. It comprehends both *hydrostatics* and *hydraulics*.

HYDROFLUOR'IC ACID, in chemistry, an acid obtained by distilling a mixture of one part of the purest fluor spar in fine powder, with two of sulphuric acid.

HYDROGEN, in chemistry, one of the constituents of water; eleven parts of hydrogen and eighty-nine of oxygen forming this fluid. It is never found but in a state of combination; and it approaches nearest to purity when combined with caloric, and in the form of gas. Whatever process decomposes water, will produce hydrogen gas, provided the oxygen of the water be absorbed by any other substance, as is seen in the following experiments. If water be dropped gradually through a gun-barrel, or iron pipe, made red hot in the middle, the water will be decomposed: the oxygen will form an oxyde or rust with the iron, and the hydrogen gas will come out pure from the opposite end. If you plunge a red hot iron into water, the hydrogen gas rises with the vapour, and is known by its peculiar smell. Hydrogen gas is twelve times lighter than common air, hence it has been applied to the filling of balloons. It is also highly inflammable under certain circumstances; hence it was formerly known by the name of *inflammable air*. It is incapable of supporting flame or combustion of itself, burning only in consequence of its strong attraction for oxygen. Hydrogen also forms one of the constituents of coal, from which it may be extracted in the form of gas; hence it has been used for lighting up streets and houses by what is called gas-lights. [See the articles GAS and GAS-LIGHTS.] To procure hydrogen gas, provide a phial with a cork stopper, through which is thrust a piece of tobacco pipe. Into the phial put a few pieces of zinc, or small iron nails: on this pour a mixture of equal parts of sulphuric acid (oil of vitriol) and water, previously slowly mixed in a tea-cup to prevent accidents. Replace the cork stopper with the piece of tobacco pipe in it. The hydrogen gas will then be liberated through the pipe in a small stream. Apply the flame of a candle or taper to this stream, and it will immediately take fire and burn with a clear flame until all the hydrogen in the phial be exhausted. In this experiment, the zinc or iron, by the action of the acid becomes oxygenized and is dissolved, thus taking the oxygen from the sulphuric acid and water. The hydrogen, the other constituent part of the water, is thus liberated and ascends. Hydrogen gas, besides being combined with water, may also be combined with sulphur, phosphorus, and carbon. It is then called sulphuretted hydrogen, phosphuretted hydrogen, and carburetted hydrogen. Sulphuretted hydrogen gas forms part of the fetid effluvium which rises from house-drains, and is produced by the decomposition of animal and vegetable substances, containing sulphur and hydrogen. Phosphuretted hydrogen gas has a fetid putrid smell, and takes fire whenever it comes in contact with the atmospheric air.

HYDRO'GENATE, or HYDRO'GENIZE, to combine hydrogen with anything.

HYDROG'RAPHY, the art of measuring and describing rivers, bays, lakes, gulfs, channels, and other collections of water.

HYDROLITE, in mineralogy, a kind of stone whose crystals are described as six-sided prisms, terminated by low six-sided pyramids, with truncated summits.

HYDROL'OGY, that part of natural history which treats of and explains the nature and properties of waters in general.

HY'DROMANCY, a method of divination by water, amongst the ancients, performed by holding a ring in a thread over the water, and repeating, along with the question to be solved, a certain form of words. If the question was answered affirmatively, the ring of its own accord struck the sides of the bowl.

HYDROM'ETER, an instrument for measuring the density and gravity, &c. of water and other liquids. That which is designed simply for ascertaining the specific gravity of different waters is more commonly called an aerometer or waterpoise,

OXYGEN GAS, THOUGH A POWERFUL SUPPORTER OF RESPIRATION, WOULD IN TIME DESTROY LIFE BY EXCESS OF ARTERIAL ACTION.

WATER WHICH BOILS AT TWENTY-ONE DEGREES AT THE FOOT OF MONT BLANC, BOILS AT ONE HUNDRED AND EIGHTY-SEVEN AT ITS SUMMIT.



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the term hydrometer being more commonly used to denote an instrument for measuring the specific gravity of spirits, though sometimes used indifferently for either. The use of the hydrometer depends on the following propositions:—1. The hydrometer will sink in different fluids in an inverse proportion to the density of the fluids; 2. the weight required to sink an hydrometer equally far in different fluids, will be directly as the densities of the fluids. Each of these two propositions gives rise to a particular kind of hydrometer; the first with the graduated scale, the second with weights: the latter deserves the preference.

HY'DROMEL, a liquor consisting of honey diluted with water. Before fermentation, it is called *simple hydromel*; after fermentation, *vinous hydromel* or *mead*.

HYDROPHANE, in mineralogy, a variety of the opal, made transparent by immersion in water.

HYDROPHO'BIA, in medicine, a symptom of canine madness, or the disease itself. This peculiar affection arises in consequence of the bite of a rabid animal, as a dog or cat, and is termed *hydrophobia*, because persons that are thus bitten, when first seised, dread the sight of water. According to the generally received opinion of medical practitioners, there is no known cure for this terrible disease; and the only preventive to be relied upon is the complete excision of the bitten part, which should be performed as soon as possible. ——In *The Athenæum*, Jan. 26, 1839, are the following important lines:—"HYDROPHOBIA. *An American physician is said to have discovered, that a few drops of any mineral acid, applied to the bite of a rabid animal, will prevent hydrophobia. This acid decomposes the poisonous saliva, and cannot be injurious.*" We know not whether the paragraph we here quote has, or has not, attracted the attention of any of those scientific individuals (and we believe there are many) whose lives are philanthropically devoted to the alleviation of human suffering; but, with such a statement before our eyes, we should reproach ourselves with the neglect of a serious duty were we not to give it all the publicity in our power; and we sincerely hope that so simple a remedy (should it prove to be one) for the most dreadful of all maladies, may be the subject of the most scrutinizing investigation that it is capable of receiving from minds thoroughly imbued with chemical and medical science.

HYDROPHTHAL'MIA, in medicine, a swelling of the bulb of the eye, from too great a collection of the vitreous or aqueous humours. There is another disease so called, which is a mere anasarcous swelling of the eyelid.

HY'DROPS, in medicine, a preternatural collection of serous or watery fluid in the cellular substance, or different cavities of the body. It receives different appellations according to the particular situations in which it is lodged; as *hydrocephalus*, *hydrothorax*, &c.

HYDROSCOPE, an instrument formerly used for measuring time. The hydroscope was a kind of water-clock, consisting of a cylindrical tube, conical at the bottom: the cylinder was graduated, or marked with divisions; and as the surface of the water, which trickled out at the point of the cone, successively sunk to these several divisions, it pointed out the hour.

HYDROSTAT'ICS, that branch of the science of hydrodynamics which treats of the weight, motion, and equilibrium of fluids, particularly of water. The pressure of a fluid upon any given part of the bottom or sides of a vessel is equal to the weight of a column of that fluid, having a base equal to that part of the bottom or side, and an altitude equal to the perpendicular height of the fluid above it. Hence may be calculated the pressure upon, and the strength required for dams, cisterns, pipes, &c. And thus we are led to what is called the *hydrostatical paradox*, which is of vast importance in this science: viz.—that any quantity of fluid, however small, may be made to balance any other quantity, however large. And yet there is nothing more paradoxical in it than that one pound at the long end of a lever should balance ten pounds at the short end; it is, indeed, but another means, like the contrivances called *mechanical powers*, of balancing different intensities of force by applying them to parts of an apparatus which move with different velocities. This law of pressure is rendered very striking in the experiment of bursting a strong cask by the action of a few ounces of water. Suppose a cask already filled with water, and let a long tube be screwed tightly into its top, which tube will contain only a few ounces of water; by filling this tube the cask will be burst. The explanation of the experiment is this: if the tube have an area of a fortieth of an inch, and contain half a pound of water, this will produce a pressure of half a pound upon every fortieth of an inch over all the interior of the cask. The same effect is produced in what is called the hydrostatical bellows.

HYDROSTATICAL BAL'ANCE, a kind of balance contrived for the finding the specific gravities of bodies, solid as well as fluid.

HYDROSTATICAL BEL'LOWS, a machine for showing the upward pressure of fluids. It consists of two circular or oval boards, covered with leather, to rise and fall like common bellows, but without valves. A pipe about 3 or 4 feet long is fixed to the under board. If a little water run into the bellows to separate the boards, then weights to the amount of two or three hundred pounds may be put on the upper board; after which, if the pipe be supplied with water, it will by the upper pressure raise the weights and sustain them. The hydrostatic or *hydraulic press* of Mr. Bramah is constructed on this principle: a prodigious force is thus obtained with great ease, and in a small compass, so that, with a machine the size of a common teapot, a bar of iron may be as easily cut as a slip of pasteboard.

THE MOST CERTAIN SYMPTOM OF MADNESS IN DOGS, IS, THAT ALL OTHER DOGS AVOID AND RUN AWAY FROM ONE THAT IS MAD.

THE DEVELOPMENTS OF THE RABID SYMPTOMS, IN MAN, RARELY TAKE PLACE BEFORE THE FORTIETH OR AFTER THE SIXTIETH DAY.



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A small forcing pump takes the place of the tube in the instrument above described, and a pump barrel and piston is substituted for the bellows; water is then driven from the small pump into the large barrel under the piston, and the piston is thus pressed against the object to be operated upon. If the small pump have one-thousandth of the area of the large barrel, and the force of 500 pounds be applied to its piston by its lever handle, the great piston will rise with a force equal to one thousand times 500 pounds, or more than 200 tons. The uses to which this power may be applied, are of great variety and extent; and it would not excite our wonder to find, ere long, that some phenomena equalling those of steam may result from its application to purposes of which at present we have formed no idea.

HYDROSULPH'URET, or HYDROSULPH'ATE, in chemistry, a combination of sulphuretted hydrogen with an earth, alkali, or metallic oxyde.

HYDROTHO'RAX, in medicine, dropsy of the chest. It frequently takes place to a considerable degree before it becomes perceptibly known; and its presence is not readily discovered, the symptoms, like those of hydrocephalus, not being always very distinct.

HYDROXANTHIC, or CARBO-SULPHURIC, in chemistry, terms used to denote an acid, formed by the action of alkalies on the bisulphuret of carbon.

HY'DRURET, in chemistry, a combination of hydrogen with sulphur, or of sulphur and sulphuretted hydrogen.

HYGE'IST, a word derived from *Hygeia*, the goddess of health; denoting that by the right use of medical science our health may be preserved. But, alas! in these days of presumption, we find the term associated with the name of one of those pests of society—an unblushing empiric! When the healing art was practised in the temple of Æsculapius, the god of medicine and the goddess of health were always in close connexion: the dictates of the one were the maxims of the other. Little did their votaries think that the temple of their smiling goddess was doomed to be transformed into a quack-doctor's shop, or that her health-inspiring bowl would be one day metamorphosed into a pill-box! We recollect having once thrown a poetical dart (a pointless one, as it has proved) at these nefarious life-destroyers, under the title of "The Empiric;" from which, with pardonable egotism, we trust, we may here be allowed to transcribe (merely) the concluding stanza;—

Hygeia, hail! I'll drink at thy pure spring,
Where Temperance and Exercise preside;
And while life's dearest boon thy handmaids bring,
Though from the wine-press flow the purple tide,
The tempting goblet from my lips I'll fling—
Scorning the gifts by luxury supplied.
Hail! then, Hygeia, hail! "thee, goddess, I adore,"
For, blest with health, I'm rich,—though scanty be my store!

HYGROM'ETER, in hydrostatics, an instrument to show the presence of water in the air, its variation in quantity, and its actual quantity existing in a given bulk of air at any given time. There are many sorts of hygrometers; for whatever body either swells or shrinks, by dryness or moisture, is capable of being formed into one. The deposition of moisture upon a decanter of water, fresh filled from a well in summer, is, perhaps, the most familiar instance of the hygrometer. This degree is called the *dew point*, as it is also the temperature of grass, upon which the dew first begins to form in a clear evening.

HYMENOP'TERA, an order of insects in the Linnæan system, having four membranaceous wings, and the tails of the females furnished with stings.

HYOSCIA'MA, in chemistry, a new vegetable alkali, extracted from the *Hyoscia-mus nigra*, or Henbane.

HYPAL'LAGE, in grammar, a figure consisting of a mutual change of cases: a species of hyperbaton.

HYPER, a Greek word signifying *over*, which is used in English composition to denote excess, or something *over* or beyond what is necessary.

HYPERBATON, in grammar, a figurative construction inverting the natural and proper order of words and sentences. The species are the *anastrophe, hyppallage, &c.*; but the proper hyperbaton is a long retention of the verb which completes the sentence.

HYPER'BOLA, in conic sections and geometry, a curve formed by cutting a cone in a direction parallel to its axis; and if the plane be produced so as to cut the opposite cone, another hyperbola will be formed, which is called the opposite hyperbola to the former.——*Hyperbolic space*, the space or content comprehended between the curve of the hyperbola and the whole ordinate.

HYPER'BOLE, in rhetoric, an exaggerated representation of anything, beyond the bounds of truth or even probability, as, "he ran swifter than the wind;" "he went slower than a tortoise," &c. Aristotle observes, that hyperboles are the favourite figures of young authors, who love excess and exaggeration; but that philosophers should not use them without a great deal of caution.

HYPER'BOLOID, in geometry, a solid formed by the revolution of an hyperbola about its axis.

HYPERBO'REANS, the name given by the ancients to the unknown inhabitants of the most Northern regions of the globe, who were reported always to enjoy a delightful climate, being, according to their notions, situated beyond the domain of Boreas or the north wind; but, in fact, they were the Laplanders, the Samoiedes, and the most northern of the Russians.

HYPERCATALEC'TIC, in Greek and Latin poetry, a verse which has a syllable or two beyond the regular and just measure.

HYPERCRITIC, one who is critical beyond measure or reason; animadverting on



FLUIDS HAVE WEIGHT, AND GRAVITATE TOWARDS THE EARTH ACCORDING TO THEIR DENSITY, BUT THEY PRESS LATERALLY ALSO.

HYGROSCOPES ONLY SHOW THE CHANGES OF HUMIDITY OR DRYNESS IN THE AIR, BUT HYGROMETERS BOTH SHOW AND MEASURE THEM.

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faults with unjust severity, and shutting his eyes to the merits of a performance: a being more to be feared than envied.

HYPER'METER, a verse containing a syllable more than the ordinary measure. When this is the case, the following line begins with a vowel, and the redundant syllable of the former line blends with the first of the following.

HY'PERSTHENE, in mineralogy, Labrador hornblende. Its colour is between a gray and greenish black, but nearly copper-red on the cleavage.

HY'PHEN, a mark or character, in grammar, implying that two words are to be connected; as pre-established, five-leaved, &c. Hyphens also serve to show the connexion of such words as are divided by one or more of the syllables coming at the end of a line.

HYPNOT'IC, in the materia medica, an epithet for such medicines as have the quality of producing sleep, whether called narcotics, hypnotics, opiates, or soporifics.

HYPOB'OLE, in rhetoric, a figure in which several things are mentioned that seem to make against the argument or in favour of the opposite side, and each of them is refuted in order.

HYPOCHON'DRIA, in anatomy, the sides of the belly under the cartilages of the spurious ribs.

HYPOCHONDRI'ASIS, in medicine, an affection characterised by dyspepsia; languor and want of energy; sadness and fear, arising from uncertain causes; with a melancholic temperament. The principal causes are sorrow, fear, or excess of any of the passions; too long continued watching; and irregular diet. *Hypochondriacs* are continually apprehending future evils; and in respect to their feelings and fears, however groundless, there is usually the most obstinate belief and persuasion.

HYPOCIST, an inspissated juice expressed from the unripe fruit of the *sessile asarum*, formed into cakes, and dried in the sun. It is used in medicine as an astringent.

HYPOCRATERIFORM, in botany, tubular but suddenly expanding into a flat border at top: applied to a monopetalous corolla.

HYPOGAS'TRIC, in medicine, relating to the *hypogastrium*, or middle part of the lower region of the belly. Also, an appellation given to the internal branch of the iliac artery.

HYPOGAS'TROCELE, in surgery, a hernia, or rupture of the lower belly.

HYPOGE'UM, a name given by ancient architects to all the parts of a building which were under ground, as the cellar, &c.

HYPOGLOS'SI, in anatomy, the ninth pair of nerves, which arise just above the *foramen magnum*, and pass out at the holes on its sides, above the condyles of the *os occipitis*.

HYPO'GYNOUS, in botany, a term applied to plants that have their corols and stamens inserted under the pistil.

HYPOPHOS'PHITE, in chemistry, a compound of hypophosphorous acid and a salifiable base.

HYPOPHOS'PHOROUS ACID, in chemistry, an acid obtained from the phosphoret of barytes. It has a very sour taste, reddens vegetable blues, and does not crystalize.

HYPO'PIUM, in medicine, matter deposited in the anterior chamber of the eye in consequence of inflammation.

HYPOS'TASIS, in theology, a term used to denote the subsistence of the Father, Son, and Holy Spirit, in the Godhead, called by the Greek Christians, three *hypostases*. The Latins more generally used *persona*, and this is the modern practice: hence we say, the Godhead consists of three *persons*.

HYPOSUL'PHATE, in chemistry, a compound of hyposulphuric acid and a base. —*Hyposulphite*, a compound of hyposulphurous acid and a salifiable base.

HYPOSUL'PHURIC ACID, in chemistry, a combination of sulphur and oxygen, intermediate between sulphurous and sulphuric acid. —*Hyposulphurous acid*, an acid containing less oxygen than sulphurous acid.

HYPOTH'ENUSE, or HYPOT'ENUSE, in geometry, the subtense or longest side of a right-angled triangle, or the line that subtends the right angle.

HYPOTH'ESIS, a principle taken for granted, in order to draw a conclusion therefrom for the proof of a point in question. Also, a system or theory imagined or assumed to account for what is not understood.

HY'SON, in commerce, a species of green tea from China.

HYS'SOP, in botany, a genus of plants, one species of which is cultivated for use. The leaves have an aromatic smell, and a warm pungent taste.

HYSTER'ICS, or HYSTE'RIA, in medicine, a disease which attacks in paroxysms or fits, which are readily excited in those who are subject to them, by passions of the mind, and by every considerable emotion, especially when brought on by surprise; hence, sudden joy, grief, fear, &c., are very apt to occasion them.

HYSTERON PROT'ERON, two Greek words, meaning *the last first*: hence it is used to designate, in rhetoric, the figure in which that word which should follow is used first; as, *Valet atque vivet* (he is well and lives).

HYSTEROT'OMY, in surgery, the Cæsarean section, or operation for extracting the fœtus.



ADDISON JOCOSELY SAYS, WHEN A MAN RISES BEYOND SIX FEET HE IS AN HYPERMETER, AND MAY BE ADMITTED INTO THE TALL CLUB.

HYPOCHONDRIACAL DISEASES WERE FORMERLY SUPPOSED TO BE CONNECTED WITH THE STATE OF THE LIVER: HENCE THE APPELLATION.

AN ARTIFICIAL PREPARATION OF ICE MAY BE MADE BY EQUAL MIXTURES OF NITRATE OF AMMONIA, BICARBONATE OF SODA, AND WATER.

VAPOUR RAISED BY THE HEAT OF THE SUN, IS PRECIPITATED BY THE COOL AIR OF THE ATMOSPHERE, AND DESCENDS AS RAIN OR HAIL.

# I.

I, the ninth letter in the alphabet, and the third vowel. Its sound varies; in some words it is long, as *high*, *mind*, *pine*; in some it is short, as *bid*, *kid*; and in others it is pronounced like *y*, as *collier*, *onion*, &c.; in a few words its sound approaches to the *ee* in *beef*, as in *machine*, which is the sound of the long *i* in all European languages except the English. In all Latin words of Latin origin, *i* preceding a vowel (unless it follows another vowel), is a consonant, as *Ianus* (*Janus*), *coniicio* (*conjicio*); but in words of Greek origin, it is a vowel, as *iambus*, *iaspis*. No English word ends with *i*, but when the sound of the letter occurs at the end of a word, it is expressed by *y*. I, used as a numeral, signifies no more than one, and it stands for as many units as it is repeated times; thus II stands for 2, and III for 3. When put before a higher numeral it subtracts itself, as IV, four; and when set after it, the effect is addition, as XII, twelve.

IAM'BIC, or IAM'BUS, in poetry, a foot consisting of two syllables, the first short and the last long, as in *declare*, *adorn*. Thus, verses composed of short and long syllables alternately are termed *iambics*: as,

If ty | rant fac | tion dare | assail | her throne,
A peo | ple's love | shall make | her cause | their own.

I'BERIS, in botany, Candy-tuft, a genus of plants, class 15 *Tetradynamia*, order 1 *Siliquosa*.

I'BEX, in zoology, an animal of the goat kind, by some naturalists (but, it is believed, erroneously) called the wild goat of the genus *Capra*. It has extremely long knotty horns, which bend backwards, and are of a blackish colour, and annulated on the surface. The body is of a dusky yellowish brown colour, and is less in proportion to the height than that of the common goat: it has, indeed, a great resemblance to the deer-kind; the legs are also perfectly like those of the deer, straight, elegant, and slender. The hair is harsh, and the male is furnished with a black beard. They inhabit the chain of mountains extending from mount Taurus, between Eastern Tartary and Siberia; they are also to be met with in the most precipitous and inaccessible parts of the Alps. They are remarkably swift, and display amazing dexterity and agility in leaping; so that the ibex hunter is constantly in imminent peril, from the fear of losing his footing when scaling tremendous precipices, from the animal, when closely pursued, turning suddenly on his enemy. Their cry is a sharp, short whistle, not unlike that of the chamois, but of shorter duration; sometimes, especially when irritated, they make a snorting noise.

I'BIS, in ornithology, a genus of birds of the grallic order, found chiefly in warm climates, more particularly in Egypt. The bill is long, subulated, and somewhat crooked; the head and throat bare; legs long, and the feet have four toes palmated at the base. They perform a powerful and elevated flight, extending their neck and legs, and uttering a hoarse croak. The white ibis (*ibis religiosa* of Cuvier) arrives in Egypt about the time that the inundation of the Nile commences, and migrates about the end of June, at which time it is first noticed in Ethiopia. The scarlet ibis (*ibis rubra*), a splendid bird, is found in the hottest parts of America, in large flocks; the plumage is scarlet; beak naked; part of the cheeks, legs, and feet, pale red. Other species are found in India, Madagascar, Cape of Good Hope, and Mexico. The ibis of the Egyptians was anciently venerated; and ibis mummies have been found in great numbers there.

ICE, water or other fluid congealed, or in a solid state. When water is exposed to a temperature below 32° of Fahrenheit, it assumes a solid state by shooting into crystals, which cross each other in angles of 60 degrees. Ice is always found at the same temperature or 32°; it is lighter than water, so of course its bulk is larger than that of water of which it is formed, and this increase of dimensions is acquired with prodigious force, sufficient to burst the strongest vessels. [See FREEZING, &c.]

I'CEBERGS, masses of ice carried by the winds through the Polar Seas, often of enormous size and height, as 300 or 400 feet above the water, and four or five times as much below it. Within the arctic circle, the congelation begins by the first of August, and a sheet of ice, perhaps of an inch thick, is formed in a single night. In a short time, the whole extent of the polar seas is covered with a vault several feet thick. As soon as the summer heat commences, it is softened, and, with the first swell of the ocean, breaks up, and the fields of the saline ice are thus annually formed and destroyed. ——*Floating Ice.* There are numerous terms for this: a large flat mass extending beyond the reach of sight is called *field-ice*; one of smaller dimensions, a *floe*; when a field is much broken up, it is called a *pack*. If the ship can sail freely through the floating pieces of ice, it is called *drift-ice*. A portion of ice rising above the common level is called a *hummock*, being produced by the crowding of one piece over another.

I'CE-BLINK, a name given by seamen to a whitish appearance in the horizon, occasioned by fields of ice, which reflect the light obliquely against the atmosphere.

I'CE-HOUSE, a building contrived to preserve ice in hot weather; the ice being



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rammed as close as possible, and at the bottom is a well to drain off the water from any part that melts.

I'CELAND SPAR, in mineralogy, calcareous spar, in laminated masses, easily divisible into rhombs.

ICE PLANT, *(mesembryanthemum crystallinum)* a plant remarkable for the little transparent, icy vesicles which cover its whole surface. The stems are herbaceous and much ramified, and the flowers are white.

ICH DIEN, the motto of the prince of Wales's arms, signifying, *I serve*. It was first used by Edward the Black Prince, to show his subjection to his father king Edward III.

ICHNEU'MON, in zoology, an animal of the genus *Viverra*, or weasel kind. Its ordinary colour is a chesnut brown; the tail tapers to a point, and the toes are distant from each other. The habits of the ichneumon are very similar to the ferret: like that animal, it preys upon poultry, destroys rats, &c.; but it also destroys the most venomous serpents, and seeks the eggs of the crocodile, digging them out of the sand, and eating them with the greatest avidity. In India and Egypt they are domesticated for the purpose of destroying rats and mice.

ICHNEUMON-FLY, a genus of insects of the *Hymenoptera* order. There are said to be 500 species included in this genus, separated into families. The whole genus has been denominated parasitical, on account of the very extraordinary manner in which they provide for the future support of their offspring. The fly feeds on the honey of flowers, and when about to lay eggs, perforates the body of some other insects or its larvæ, with its sting or instrument at the end of the abdomen, and there deposits them. These eggs, in a few days, are hatched, and the young nourish themselves with the juices of their foster-parent, which, however, continues to move about and feed till near the time of its change to a chrysalis, when the larvæ of the ichneumon creep out by perforating the skin in various places, and each spinning itself up in a small oval silken case, changes into a chrysalis, and after a certain period they emerge in the state of complete ichneumons. They are great destroyers of caterpillars, plant-lice, and other insects, as the ichneumon is of the eggs and young of the crocodile.

ICHNOG'RAPHY, in perspective, the view of any thing cut off by a plane parallel to the horizon, just at the base of it.——In architecture, the ground plan of a building.——In fortification, a draught of the length and breadth of the works raised about a place.

I'CHOR, a thin, watery humour, like serum; but the word is sometimes also used for a thicker kind, flowing from ulcers, called also *sanies*.

ICHTHYI'TES, in mineralogy, a stone so called because it has a cavity in it resembling a fish.

ICHTHYOCOL'LA, Isinglass [which see.]

ICH'THYOLITE, in the natural history of fossils, the figure or impression of a fish in a rock.

ICHTHYOL'OGY, that part of zoology which treats of fishes, their structure, form, and classification, their habits, uses, &c. These animals are divided into five orders, namely, into *apodal*, or those which have no ventral fins; *jugular*, which have the ventral fins placed more forward than the pectoral; *abdominal*, or those which have the ventral fins situated behind; *thoracic*, or those which have their ventral fins situated immediately under the pectoral; and *cartilaginous* fishes, which have a cartilaginous instead of a bony skeleton. Cuvier's classification, however, is much more extensively divided; but unless our space would permit us to describe the different orders and families, the mere enumeration of them would furnish no useful information.

ICHTHYO'SIS, in medicine, a cutaneous disease, deriving its name from the resemblance of the scales to those of a fish.

I'CONISM, in rhetoric, a figure of speech which consists in representing a thing to the life.

ICONOCLASTS, that party of Christians which would not tolerate images in their churches, much less the adoration of them. Images and paintings were unknown in the Christian church till the fourth century; and the opposition to them was long continued with great violence.

ICONOG'RAPHY, the description of images or ancient statues, busts, semibusts, paintings in fresco, mosaic works, &c.

ICOSAHE'DRON, in geometry, a regular solid, consisting of twenty triangular pyramids, whose vertices meet in the centre of a sphere supposed to circumscribe it, and therefore have their heights and bases equal.

ICOSAN'DRIA, in botany, the twelfth class in the Linnæan system, including plants with twenty stamens or more to their flowers, as the melon, Indian fig, pomegranate, plum, &c.

ICTERUS, in medicine, the jaundice. It is placed by Cullen, in his Nosology, as a genus of diseases, class *Cachexiæ*, order *Impetigines*.

ICTERUS, in medicine, the disease which we distinguish by the name of jaundice.

IDE'A, in general, the image or resemblance of a thing, which, though not seen, is conceived by the mind; conception, apprehension, notion; whatever is held or comprehended by the understanding or intellectual faculties. In logic, *idea* denotes the immediate object about which the mind is employed, when we perceive or think of any thing.

IDE'AL, an imaginary model of perfection. In creating the *ideal of beauty*, man does not follow the arbitrary suggestions of



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fancy, but strives to discover and present the prototypes of nature. Imagination finds the materials of the ideal in reality, but she unites the separate traits of the grand and the beautiful, dispersed through nature, in one perfect ideal. So, too, there may be ideals of the hateful and the horrid, the grand or the mean, the heroic or the ridiculous; for the ideal aims merely at completeness. The claims of the fine arts are satisfied when the beautiful is combined with the true; but truth must in no case be sacrificed to beauty.

IDE'ALISM, that system of philosophy which makes every thing to consist in ideas, and denies the existence of material bodies. In a work entitled "Guesses at Truth," (Lond. 1827) it is very appositely said, "*Materialism* is a circumference without a centre; *idealism* is a centre without a circumference."

IDEOGRAPH'IC, an epithet given to that kind of writing which expresses the ideas and not the sound. It is a species of hieroglyphics.

IDES, eight days in each month of the Roman calendar. They began on the 15th of March, May, July, and October; and on the 13th of the other months. The Ides, like the calends and nones, were always reckoned backwards; thus they said viii Idus, the eighth day before the Ides, vii Idus, the 7th before the Ides, &c. This method of reckoning is still retained in the chancery of Rome, and in the calendar of the breviary.

IDIOELEC'TRIC, containing electricity in its natural state, or electric *per se*.

IDI'OM, in grammar, is a term applied to such words, or combinations of words, as have a peculiar sense in any one language; but which, if transferred into another, would have no meaning, or a wholly different one. Idioms, then, can never be literally translated; and the merit of a translator, in this respect, consists in substituting the corresponding *idiom* of the language into which he is translating.

IDIOPATH'IC, a term for any disorder peculiar to a certain part of the body, and not arising from any preceding disease; in which sense, it is opposed to sympathetic. Thus, an epilepsy is *idiopathic*, when it happens merely through some fault in the brain; and *sympathetic*, when it is the consequence of some other disorder.

IDIOSYN'CRASY, a peculiar temperament or organization of body, whereby it is rendered more liable to certain disorders, than bodies differently constituted usually are.

I'DLENESS, the state of a person who is unoccupied in labour, and is generally the effect of laziness. "Alphonsus, king of Arragon, being told by one of his courtiers that it did not become his state and grandeur to employ himself as other men, he answered,—'Think ye that God and nature have given kings hands only to feed themselves withal?' The whole creation condemns and confutes *idleness*; the sun, moon, stars, herbs, plants, sensible creatures, confute the slothful, preach down idleness, and call for labour and diligence."

I'DOCRASE, a mineral found near Vesuvius, in unaltered rocks ejected by the volcano, and in various other places. It is very often found in shining priamatic crystals, its primitive form being a four-sided prism with square bases.

IDOL'ATRY, in its literal acceptation, denotes the worship paid to idols. It is also used to signify the superstitious adoration paid to other objects. Soon after the flood, idolatry seems to have been the prevailing religion of all the world; for wherever we cast our eyes at the time of Abraham, we scarcely see anything but false worship and idolatry. The heavenly bodies appear to have been the first objects of idolatrous worship; and, on account of their beauty, their influence on the productions of the earth, and the regularity of their motions, the sun and moon were particularly so, being considered as the most glorious and resplendent images of the Deity: afterwards, as their sentiments became more corrupted, they began to form images, and to entertain the opinion, that by virtue of consecration, the gods were called down, to inhabit or dwell in their statues. Hence Arnobius takes occasion to rally the pagans for guarding so carefully the statues of their gods, who, if they were really present in their images, might save their worshipper the trouble of securing them from thieves and robbers. But history plainly teaches us, that before the idea of one infinite and true God was properly comprehended by men, their imagi nations created rulers and deities, to whom they ascribed the direction of all outward events, and every tribe or family had its peculiar object of adoration. The selfish and cunning turned this frailty to their own advantage; and hence originated seers, oracles, and all the numerous superstitions which have disgraced the world.

I'DYL, a short pastoral poem, such as the Idyls of Theocritus, Gesner, &c.

IGNES'CENT, in mineralogy, an epithet applied to a stone or mineral which gives out sparks when struck with steel or iron.

IG'NIS FAT'UUS, a meteor or light that appears in the night over marshy grounds. It is occasioned by an ascent from the ground of phosphuretted hydrogen gas, decomposed from animal and vegetable remains, whose own motions ignite it in the air. It is vulgarly called *Will-o'the-wisp*, or *Jack-o'-lantern*.

IGNISPI'CIUM, a species of divination practised by the Romans, which consisted of observations made on the fire used in sacrifices.

IG'NIS JUDI'CIUM, in archæology, the old judicial trial by fire.

IG'NIS SA'CER, in medicine, the disease vulgarly known by the name of St. Anthony's fire.

IGNI'TION, in chemistry, the application of fire to metals, &c. till they become luminous, or red hot, without melting. Some metals liquefy before they become ig-





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THE AVOWED OBJECT OF THE "ILLUMINATI" WAS TO DIFFUSE THE LIGHT OF SCIENCE AND THE BLESSINGS OF VIRTUE OVER THE WORLD.

THE REAL OBJECT OF THE "ILLUMINATI" APPEARS TO HAVE BEEN THE SUBVERSION OF ALL ORDER, GOVERNMENT, AND RELIGION.

nited, as lead and tin; iron, on the other hand, becomes ignited long before it melts.

IGNORA'MUS, in law, the term used by the grand jury when they *ignore* or throw out a bill of indictment. It denotes 'We know nothing about it, or have not sufficient evidence respecting it.'

IGUA'NA, in zoology, a lizard, of which there are many species found in the tropical parts of America. They are characterized by a body and long round tail covered with imbricated scales, five toes on each foot, and the crest of the throat and the dorsal suture dentated. They feed on fruits, seeds, and leaves. The female deposits her eggs, which are about the size of a pigeon's, in the sand. Some species attain a great size, and are very active; but, although formidable in appearance, they are all timid and defenceless.

IGUAN'ODON, the name given by Dr. Mantel, to an enormous fossil amphibious animal, 50 or 60 feet long, discovered by him in Tilgate Forest, Sussex, amid numerous other remains, animal and vegetable, of species not existing. In May, 1836, another interesting specimen of the Iguanodon skeleton was discovered in the sparkling sand formation, in the neighbourhood of Maidstone, and has been placed in the museum of Dr. Mantel, at Brighton. The quarry in which these remains occurred consists of many strata, regularly alternating, of compact limestone, and of sand more or less loose. The animal when living must have been upwards of 60 feet in length. The bones are imbedded in the stone in a very confused manner, and all of them are more or less distorted by the compression they had undergone since their first envelopment in the rock, which, we need scarcely observe, was originally sand. The recent Iguana, as is well known, lives chiefly upon vegetables; and it is furnished with long and slender toes, by which it is enabled to climb trees with great facility in search of food; but no tree could have borne the weight of the colossal Iguanodon. Its enormous bulk would require to be supported by feet of corresponding solidity; accordingly we find that the hind feet, as in the hippopotamus and rhinoceros, were composed of strong, short, massy bones, and furnished with claws, not hooked, as in the Iguana, but compressed, as in the land tortoises. But in the fore feet or hands of the Iguanodon, the bones are analogous to those of the fingers of the Iguana; long, slender, flexible, and armed with curved claw-bones; thus furnishing a prehensile instrument, to seize and tear to pieces the palms, arborescent ferns, and dragon-blood plants, which constituted the food of the Iguanodon.

I. H. S. an abbreviation for *Jesus Hominum Salvator*, Jesus the Saviour of Mankind.

ILEX, the HOLLY, in botany, the name of a genus of evergreen shrubs, class 4 *Tetandria*, order 3 *Tetragynia*.

ILI'AC PASSION, a sort of nervous colic, in which the fæcal portion of the food is voided by the mouth.——*Iliac region*, the side of the abdomen between the ribs and the hips.

IL'IAD, an epic poem in 24 books, composed by Homer. The subject of this poem is the wrath of Achilles, in describing which, the poet exhibits the countless evils which spring from disunion and public dissensions.

IL'IUM OS, in anatomy, the haunch-bone.

ILLI"CIUM, the Aniseed-tree; a genus of plants, consisting of two species, viz. the *illicium anisatum*: and *illicium floridanum*. The whole of the first-mentioned plant, especially the fruit, has a pleasant aromatic smell, and a sweetish acrid taste. They belong to class 13 *Polyandria*, order 7 *Polygamia*.

ILLUMINA'TI, the name given to certain associations of men in modern Europe, who combined to overthrow the existing religious institutions, and to substitute for them their boasted "law of reason." They sprung up at Ingolstadt, in 1776, and the society there was dissolved by the Bavarian government in 1784: not however, till their tenets had been indefatigably and widely promulgated. By some writers the *Illuminati* are said to have had a powerful influence in promoting the French revolution; and by others the assertion is flatly denied.——Among the early Christians, the term *Illuminati* was given to persons who had received baptism; in which ceremony they received a lighted taper, as a symbol of the faith and grace they had received by that sacrament.

ILLU'MINATING, the art of laying colours on initial capitals in books, or otherwise embellishing manuscript books, as was formerly done by artists called *Illuminators*. These manuscripts, containing portraits, pictures, and emblematic figures, form a valuable part of the riches preserved in the principal libraries in Europe.

IM'AGE, in optics, is the appearance of an object made either by reflection or refraction. In *plane* mirrors, the image is of the same magnitude as the object, and appears as far behind the mirror as the object is before it. In *convex* mirrors, the image is less than the object, and farther distant from the centre of the convexity, than from the point of reflection.——*Image*, in rhetoric, a lively description of any thing in discourse, which presents a kind of picture to the mind.——*Image*, in a religious sense, is an artificial representation of some person or thing, used either by way of decoration and ornament, or as an object of religious worship and veneration.

IMAGINA'TION, in metaphysics, that action of the mind by which it combines ideas, and "bodies forth the forms and images of things." The *Edin. Encyc.* observes: "We would define imagination to be the will working on the materials of memory; not satisfied with following the order prescribed by nature, or suggested by accident, it selects the parts of different conceptions, or objects of memory, to form



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a whole more pleasing, more terrible, or more awful, than has ever been presented in the ordinary course of nature." In popular language, and in poetry, it is often confounded with *fancy*; but, strictly speaking, fancy is a lower property of the mind than the sublime faculty of the imagination, which elevates the mind by ideal creations, and ennobles man's existence.

IM'AM, or IM'AN, a Mahometan priest or head of the congregations in their mosques. In ecclesiastical affairs they are independent, and are not subject to the mufti, though he is the supreme priest.

IM'BRICATE, or IM'BRICATED, in botany, lying over each other, like tiles on a roof; parallel, with a straight surface, and lying one over the other; as leaves in the bud.

IMMATE'RIAL, something devoid of matter, or that is pure spirit: thus God, angels, and the human soul are immaterial beings.

IMMER'SION, in astronomy, is when a star or planet is so near the sun with regard to our observations, that we cannot see it, being as it were hidden in the rays of that luminary. It also denotes the beginning of an eclipse of the moon, and of the satellites of Jupiter. The eclipses of the first satellite of Jupiter are much used for discovering the longitude. The immersion of that satellite is the moment in which it appears to enter the disc of Jupiter, and its emersion the moment when it appears to come out.

IMMOLA'TIO, a ceremony used in the Roman sacrifices; it consisted in throwing upon the head of the victim some sort of corn and frankincense, together with the *mola* or salt cake, and a little wine.

IMMORTALI'TY, the quality of endless duration, as the immortality of the soul. The idea that the dissolution of the body involves the annihilation of existence, is so cheerless, so saddening, that the wisest and best of men, of all ages, have rejected it, and all civilised nations have adopted the belief of its continuation after death, as one of the main points of their religious faith. The Scriptures afford numerous evidences of the soul's immortality; the hope of it is a religious conviction; man cannot relinquish it, without abandoning, at the same time, his whole dignity as a reasonable being and a free agent; and hence the belief in immortality becomes intimately connected with our belief in the existence and goodness of God.

IMMU'NES, in Roman history, an epithet applied to such provinces as had obtained an exemption from the ordinary tribute. The term is also applied to soldiers who were exempt from military service.

IM'PACT, in mechanics, the simple or single act of one body upon another to put it in motion. The *point of impact* is the point or place where the body acts.

IMPA'LE, in heraldry, to conjoin two coats of arms pale-ways, as is the case with those of a husband and wife, is *to impale* them.

IMPA'LEMENT, the putting to death by thrusting a stake through the body, the victim being left to perish by lingering torments. This barbarous mode of torture is used by the Turks, as a punishment for Christians who say any thing against the law of the prophet, who intrigue with a Mohammedan woman, or who enter a mosque.

IMPARISYLLAB'IC, in grammar, an epithet for words having unequal syllables.

IMPAR'LANCE, in law, a privilege or license granted, on petitioning the court for a day to consider or advise what answer the defendant shall make to the plaintiff's declaration.

IMPASTA'TION, the mixture of various materials of different colours and consistencies, baked or bound together with some cement, and hardened by the air or by fire.

IMPA'TIENS, a genus of plants, of which there are twelve species. The *impatiens noli tangere*, common yellow balsam, is an annual plant; during the day the leaves are expanded, but at night they hang pendent, contrary to what is observed in most plants, which, from a deficiency of moisture, or a too great perspiration from heat, commonly droop their leaves in the day-time. When the seeds are ripe, upon touching the capsule they are thrown out with considerable force; hence its name.

IMPEACH'MENT, in law, the accusation brought against a public officer in parliament, for treason or other crimes and misdemeanors. An impeachment by the House of Commons is of the nature of a presentment to the House of Lords, the supreme court of criminal jurisdiction. The articles of impeachment found by the Commons are the same as a bill of indictment, which is to be tried by the Lords.

IMPENETRABIL'ITY, in philosophy, that quality of matter which prevents two bodies from occupying the same space at the same time.

IMPER'ATIVE, in grammar, one of the moods of a verb, used when we would command, exhort, or advise; as *go, attend*, &c.

IMPERA'TOR, in Roman antiquity, a title of honour conferred on victorious generals, by their armies, and afterwards confirmed by the senate. After the overthrow of the republic, *imperator* became the highest title of the supreme ruler; and in later times it had the signification which we attach to the word *emperor*.

IMPER'FECT, a tense in grammar, denoting time indefinitely, being neither absolutely past, nor present.——In botany, an epithet for a plant that is deficient in flower, seeds, anther, or stigmas.

IMPE'RIAL, pertaining to an empire. Thus the *imperial chamber*, means the sovereign court of the German empire; an *imperial city*, a city in Germany which has no head but the emperor; the *imperial diet*, an assembly of all the states in the German empire.

IMPE'RIALIST, a subject or soldier of an emperor. The denomination *imperialists*



NO MAN MAY OWNE THE EXISTENCE OF AN INFINITE SPIRIT, CAN DOUBT THE POSSIBILITY OF A FINITE OR IMMATERIAL SPIRIT.

THE IDEA OF A STATE OF RETRIBUTION MAY VERY NATURALLY HAVE GIVEN RISE TO A BELIEF OF THE RESURRECTION OF THE BODY.

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A LARGE PORTION OF THE REVENUE OF GREAT BRITAIN IS DERIVED FROM DUTIES ON MERCHANDISE IMPORTED FROM FOREIGN COUNTRIES.

is often given to the troops or armies of the emperor of Austria.

IMPER'MEABLE, an epithet given to cloth or any other textile fabric, that is rendered water-proof by being steeped in any glutinous solution, or by the process described under Macintosh's patent for applying caoutchouc between two surfaces of cloth.

IMPER'SONAL VERB, in grammar, a verb used only in the third person singular, with *it* for a nominative in English, as *it rains;* and without a nominative in Latin, as *pugnatur.*

IMPETI'GO, in medicine, a name by which the leprosy of the Greeks is sometimes called.——*Impetigo* is also a species of itch, attended with dry scales or scurf, and an uneasy pruriginous itching: hence diseases of this kind are called *impetiginous.*

IMPETRA'TION, in law, the obtaining any thing by request or prayer: but in our old statutes, it is taken for the pre-obtaining of church benefices in this realm, from the court of Rome, which belonged to the disposal of the king and other lay-patrons of the realm.

IM'PETUS, in mechanics, the force with which one body impels or strikes another.

IMPORTS AND EXPORTS. Under these appellations are comprised the various commodities brought into this country from abroad, and those home manufactures and products, which, through our commercial relations, we sell, or barter, and send to other countries. The high degree of civilisation at which Great Britain has arrived, the surpassing wealth of her aristocracy, her merchants, and manufacturers, together with the increasing demand there is for foreign luxuries furnish a ready mart for almost every description of produce that is not indigenous to her own soil; while, on the other hand, the industry and skill of her artisans, and the rapid strides which science has been making during the present century, particularly in creating machinery, the powers of which strike the common observer as perfectly miraculous, enable her to produce numerous articles of commerce so excellent in their kind as to defy competition. In a notice of this kind it would be ridiculous to attempt an enumeration of the different articles imported, and scarcely less so to name those which are manufactured at home and exported. Formerly woollen goods formed the principal article of native produce exported from Great Britain; and next to it were hardware and cutlery, leather manufactures, linen, tin and lead, copper and brass manufactures, coal, and corn. Now, so prodigious is our cotton manufacture, that the exports of cotton stuffs and yarn amount to about a half of the entire exports of British produce and manufactures. The principal articles of import during the same period have consisted of sugar, tea, corn, timber, and naval stores, cotton wool, sheep's wool, woods and drugs for dyeing, wine and spirits, tobacco, silk, tallow, hides and skins, coffee, spices, bullion, &c. Among a number of extremely sensible remarks on this subject by Mr. M'Culloch, we find the following: "The improvement that has taken place in the mode of living during the last half century has been partly the effect, and partly the cause, of the improvement of manufactures, and the extension of commerce. Had we been contented with the same accommodations as our ancestors, exertion and ingenuity would long since have been at an end, and routine have usurped the place of invention. Happily, however, the desires of man vary with the circumstances under which he is placed, extending with every extension of the means of gratifying them, till, in highly civilized countries, they appear almost illimitable. * * * The lower classes are continually pressing upon the middle; and these, again, upon the higher, so that invention is racked, as well to vary the modes of enjoyment, as to increase the amount of wealth. That this competition should be, in all respects, advantageous, is not to be supposed. Emulation in show, though the most powerful incentive to industry, may be carried to excess; and has certainly been ruinous to many individuals, obliged sometimes, perhaps, by their situation, or seduced by example, to incur expences beyond their means. But the abuse, even when most extended, as it probably is in England, is, after all, confined within comparatively narrow limits, while the beneficial influence resulting from the general diffusion of a taste for improved accommodations adds to the science, industry, wealth, and enjoyments of the whole community." In his remarks on the effects of foreign competition, the same writer forcibly and truly says, "Provided tranquillity be maintained at home, and that Britain continues to be exempted from that political agitation that is the bane of industry and the curse of every country in which it prevails, we have nothing to fear from foreign competition. Our natural and acquired advantages for the prosecution of manufactures and trade, are vastly superior to those of every other country; and though foreigners do excel us in a few departments, and may come to excel us in others, so that the character and channels of our trade may, in consequence, be partially changed, there is not so much as the shadow of a foundation for supposing that its amount will be at all affected. On the contrary, it is all but certain that it will continue to augment with the augmenting wealth and population of the innumerable nations with which we have commercial relations."

IMPO'SE, in printing, to put the pages on the *imposing stone,* and fit on the chase, and thus prepare the form for the press.—In legislation, to lay on a tax, toll, duty, or penalty.——*To impose on,* to mislead by a false pretence.

IMPOSITION *of hands,* a religious ceremony, in which a bishop lays his hand upon the head of a person, in ordination, confirmation, or in uttering a blessing. This

THE BUSINESS OF IMPORTATION AND EXPORTATION IS SUBJECTED TO VARIOUS REGULATIONS, EMBODIED IN ACTS OF PARLIAMENT.



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practice is also generally observed by the dissenters at the ordination of their ministers, while one prays for a blessing on the labours of him they are ordaining. Imposition of hands was a Jewish ceremony, introduced not by any divine authority, but by custom; it being their practice, whenever they prayed for any person, to lay their hands on his head. Our Saviour observed the same ceremony both when he conferred his blessing on the children, and when he cured the sick.

IMPOS'SIBLE, that which cannot be done or effected. A proposition is said to be *impossible*, when it contains two ideas, which mutually destroy each other, and which can neither be conceived nor united together in the mind: thus, it is impossible that a circle should be a square, or that two and two should make five. A thing is said to be *physically impossible*, that cannot be done by any natural powers, as the resurrection of the dead; and *morally impossible*, when in its own nature it is possible, but attended with difficulties or circumstances which give it the appearance of being impossible.

IM'POST, any tax or tribute imposed by authority; particularly a duty or tax laid by government on goods imported.——In architecture, that part of a pillar in vaults and arches, on which the weight of the building rests; or the capital of a pillar, or cornice which crowns the pier and supports the first stone or part of an arch.

IMPOSTHUME, in surgery, an abscess, or gathering of corrupt matter in any part of the body.

IMPOTENCE, or IM'POTENCY, want of strength or power, animal, intellectual, or moral. The first is a want of some physical principle, necessary to an action; the last denotes the want of power or inclination to resist or overcome habits or natural propensities.

IMPREGNA'TION (applied to animals and plants) the act of fecundating and making fruitful. In botany, to *impregnate* is to deposit the fecundating dust of a flower on the pistils of a plant.——*Impregnation*, in chemistry, is when any body has imbibed so much moisture that it will admit no more.

IMPRESCRIPTIBLE RIGHTS, such rights as a man may use or not at pleasure, those which cannot be lost to him by the claims of another founded on prescription.

IMPRES'SION, in the arts, is used to signify the transfer of engravings from a hard to a soft substance, whether by means of the rolling-press, as in copper-plate and lithographic printing, or by copies in wax, &c. from medals and engraved gems. The word is also used to denote a single edition of a book; as, the whole *impression* of the work was sold in two months.

IM'PRIMIS, (*Latin*) in the first place; first in order.

IMPRIMA'TUR (*Latin*, let it be printed), the word by which the licenser allows a book to be printed, in countries where the censorship of books is rigorously exercised.

IMPROMPTU (from the Latin phrase *in promptu habere*, to have in readiness), without previous study; applied particularly to poetic effusions of the moment.

IMPROPRIA'TION, in law, the act of appropriating or employing the revenues of a church living to one's own use.——*Lay impropriation* is an ecclesiastical living in the hands of a layman. Before the destruction of the monasteries by Henry VIII., in 1539, many livings were in the possession of *impropriators*; the great tithes they kept themselves, allowing the small tithes to the vicar or substitute who served the church. On the suppression of the monasteries, Henry disposed of the great tithings among his favourites.

IMPROVVISATORI, those who compose and recite verses extemporaneously, either accompanying the voice, or not, with an instrument, as is the practice in Italy. This talent of reciting extemporaneous verses appears to be a natural production of the Italian soil, it being no uncommon thing to see two masks meeting during the carnival, and challenging each other in verse, and answering stanza for stanza with genuine humour and poetic feeling. Numerous, indeed, are the instances which might be given of *improvvisatori* and *improvvisatrici*, whose effusions have charmed the ears of monarchs, and excited the admiration of travellers; yet generally, perhaps, their extemporaneous compositions have been within the range of mediocrity. Bouterwek, in his History of Italian Poetry, says, "Among the poetical curiosities of modern Italy, the art of the improvvisatori has higher claims on our attention than most printed collections of Italian poetry. Their art shows with what flexibility and power an Italian fancy, when once excited, can string together words and images in verse. It thus becomes manifest, how an Italian, even with a moderate cultivation of mind, is able to increase, by a little volume of pretty good verses, the number of those which he already finds, when he has once by heart the poetry of his predecessors. The artificial and yet happy enthusiasm of modern *improvvisatori*, is a living monument of the former achievements of Italian intellect."

IM'PULSE, the effect of one body acting on another, or a continuation of motion after the cause is withdrawn; thus, the finger moved against a ball carries the ball a short distance with the finger's velocity, and when the finger is taken away, the motion of the ball continues till the motion imparted to it is destroyed by rubbing or resistance.

INA'LIENABLE, an epithet applied to such things as cannot be legally alienated or made over to another: thus the dominions of a sovereign, the revenues of the church, the estates of a minor, &c. are *inalienable*, otherwise than with a reserve of the right of redemption.

INAUGURA'TION, the act of inducting into office with solemnity, as the coronation of an emperor or king, or the consecration

"THOSE WHO ASSERT THE IMPOSSIBILITY OF SPACE EXISTING WITHOUT MATTER," AS LOCKE OBSERVES, "MUST MAKE A BODY INFINITE."

SEVERAL ITALIAN POETS, BOTH MALE AND FEMALE, OF THE PRESENT DAY, ARE GREAT ADEPTS IN THE ART OF EXTEMPORANEOUS COMPOSITION.

AT AN INCIDENCE OF SEVENTY-FIVE DEGREES, GLASS REFLECTS 623 RAYS IN 1000, AND A METALLIC MIRROR BUT 561.

of a prelate; so called from the ceremonies used by the Romans, when they were received into the college of augurs.

IN'CA, the name or title given by the natives of Peru to their kings and to the princes of the blood, before the conquest of that country by the Spaniards.

INCANDES'CENCE, the glowing whiteness of a metallic or other body caused by intense heat.

INCARNA'TION, in theology, the act whereby the second person of the Holy Trinity assumed the human nature, viz. a true body and reasonable soul, in order to accomplish the redemption of fallen mankind.——In surgery, the process of healing wounds, and filling the part with new flesh.

INCAR'NATIVES, in surgery, medicines which assist nature in healing wounds.

IN'CENSE, in the materia medica, a dry resinous substance, known by the name of *thus* and *olibanum*. The burning of incense made part of the daily service of the Jewish temple; and in the Romish church it is the deacon's office to *incense* the officiating priest or prelate, and the choir. In the religious rites of heathen nations, too, the odours of spices and fragrant gums were burnt as incense.——*Incensed*, in heraldry, an epithet for panthers when represented with fire issuing from their mouths and ears.

INCEP'TIVE, in grammar, an epithet for verbs which express a proceeding by degrees in an action.——*Inceptive magnitudes*, in geometry, such moments or first principles as, though of no magnitude themselves, are yet capable of producing such.

IN'CIDENCE, the angle formed by the perpendicular to any surface, and the direction with which any elastic body strikes the surface.——In optics, when rays of light striking a body are reflected, the angle of incidence and the angle of reflection are equal. The *line of incidence* is that line in which light is propagated from a radiant point to a point in the surface of the speculum, otherwise called the *incident ray*.

IN'CIDENT, in law, something that inseparably belongs to another: thus, a court baron is incident to a manor.

INCIP'IENT, commencing: as the *incipient* stage of a fever.

INCI'SORS, the name given to the four front teeth of both jaws, because they cut the food.

INCIV'ISM, unfriendliness to the state or government of which one is a citizen.

INCLINA'TION, a word frequently used by mathematicians, signifying the mutual approach, tendency, or leaning of two lines, or two planes towards each other, so as to make an angle.——*Inclination of a right line to a plane*, is the acute angle which that line makes with another right line drawn in the plane through the point where the inclined line intersects it, and through the point where it is also cut by a perpendicular drawn from any point of the inclined plane.——*Inclination of the axis of the earth*, is the angle which it makes with the plane of the ecliptic; or the angle contained between the planes of the equator and ecliptic.——*Inclination of a planet*, is an arch of the circle of inclination, comprehended between the ecliptic and the plane of a planet in its orbit.

INCLI'NED PLANE, in mechanics, a plane inclined to the horizon, or making an angle with it, which is one of the three mechanical powers. The wedge is a modification of this machine, being formed of two inclined planes placed base to base. The screw is another modification, being, in fact, merely an inclined plane wound round the cylinder. Its common application is to elevate bodies, which are raised perpendicularly while they are moved up the plane, and the force gained is as the increased distance moved over, that is, as the length of the inclined plane is to the perpendicular height gained.

INCOG'NITO, (abbreviated to *incog.*) unknown, or so disguised as not to be recognised; a mode of travelling without any mark of distinction, which is sometimes adopted by princes and great people who do not wish to be recognised.

INCOMBUS'TIBLE, a body which is not decomposed, or combined, during the mechanical action which takes place between hydrogen and oxygen, or their compounds, in the process called combustion.——*Incombustible cloth*, a sort of linen cloth made from a stone in the form of a talc; which stone is called *lapis asbestus*, and *asbestos*.

INCOMMEN'SURABLE, in geometry, a term applied to two lines or quantities which have no common measure by which they can be exactly divided. Quantities are *incommensurable*, when no third quantity can be found that is an aliquot part of both.

INCOMPAT'IBLE, in a general sense, morally inconsistent; or that cannot subsist with another, without destroying it: thus, truth and falsehood are essentially *incompatible*: so cold and heat are *incompatible* in the same subject, the strongest overcoming and expelling the weakest. In a legal sense, that is *incompatible* which cannot be united in the same person, without violating the law or constitution.

INCON'TINENCE, and INCON'TINENCY, in a medical sense, the inability of any of the animal organs to restrain discharges of their contents, or the involuntary discharge itself; as, an *incontinence* of urine in diabetes.

INCORPORA'TION, in law, the formation of a legal or a political body, with the quality of perpetual existence or succession, unless limited by the act of incorporation.——*Incorporation*, in chemistry, the mingling the particles of different bodies together into one mass, in such manner that the different ingredients cannot be distinguished.

INCRAS'SATE, in pharmacy, to make fluids thicker by the mixture of other substances less fluid, or by evaporating the thinner parts.——*Incrassated*, in botany, becoming thicker towards the flower, as a peduncle.

BODIES WHICH REFRACT MOST REFLECT MOST; THE LOCAL ATMOSPHERE WHICH INCREASES ONE INCREASES THE OTHER.



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IN'CREMENT, in mathematics, the quantity by which a variable quantity increases.

INCRES'CENT, in heraldry, an epithet applied to the moon when she is in her increase.

INCRYS'TALIZABLE, of a nature incapable of being formed into crystals.

INCUBATION, the process of a bird sitting on eggs and hatching its young: the time required for this varies in different birds, domestic fowls sit three weeks, ducks, geese, and turkeys a month; pigeons, eighteen days, &c. All known birds, with the exception of the cuckoo, discharge this office themselves; and the perseverance and devotion of the female during incubation is admirable. The gradual development of the young bird in the egg has been observed, particularly in the case of the eggs of the domestic hen; and it is wonderful to observe the care with which the parent attends to its wants, and gives it the warmth of her sheltering wings, until the down which at first covers its body is superseded by feathers, and it becomes gradually accustomed to the external air. ——*Artificial Incubation* is carried to a high degree of perfection both in Egypt and in China; and of late we have had opportunities of witnessing the process in London. It can be effected by means of an oven, a furnace, or by steam.

IN'CUBUS, or *Nightmare*, the name of a disease which consists in a spasmodic contraction of the muscles of the breast, usually happening in the night, and attended with a very painful difficulty of respiration and great anxiety. The most obvious symptom of this disease is a sensation of some great weight laid upon the breast. Sometimes the sufferer finds himself in some inextricable difficulty, endeavouring to escape from a monster, or, perhaps, in imminent danger of falling from a precipice, while his limbs refuse to do their office, until he suddenly awakens himself by starting from his recumbent posture, or by a cry of terror. It is generally owing to repletion and indigestion, and is often superinduced by lying on the back.

INCUM'BENT, the person who is in present possession of an ecclesiastical benefice.

IN'CUS, in anatomy, the largest and strongest of the bones in the tympanum of the ear, so called from its resembling an anvil (*incus*) in shape.

INDEFEASIBLE, in law, an epithet for an estate, or any right which cannot be defeated or made void.

INDEFINITE, or INDETERMINATE, that which has no certain bounds; or to which the human mind cannot affix any. Descartes makes use of this word in his philosophy instead of *infinite*, both in numbers and quantities, to signify an inconceivable number, or a number so great as not to be capable of any addition.——*Indefinite*, is also used to signify a thing that has but one extreme; for instance, a line drawn from any point and extended infinitely.——*Indefinite*, in grammar, is understood of nouns, pronouns, verbs, participles, articles, &c. which are left in an uncertain indeterminate sense, and not fixed to any particular time, thing, or other circumstance.

INDEM'NITY, in law, a writing to secure one from all damage and danger that may ensue from any act.——*Act of Indemnity*, an act passed every session of parliament for the relief of those who have neglected to take the necessary oaths, &c.

INDENT'ED, in heraldry, an epithet for a line which is notched or cut in like the teeth of a saw.

INDENT'URE, in law, a writing containing an agreement or contract made between two or more persons: so called because it was indented or cut scollopwise, so as to correspond with another writing containing the same words. But *indenting* is often neglected, while the writings or counterparts retain the name of *indentures*.

INDEPEN'DENTS, a sect of Protestant dissenters, distinguished, not by doctrine, but discipline. They regard every congregation of Christians, meeting in one building for the purpose of public worship, as a complete church, *independent* of any other religious government; and they reject the use of all creeds, as impious substitutes for the letter of the Scripture. The direction of each church is vested in its elders. The *Independents* arose in the reign of Elizabeth; and during the civil wars of England, in the 17th century, they formed a powerful party.

INDETER'MINATE QUANTITY, in mathematics, a quantity which has no certain or definite bounds.——*Indeterminate Analysis*, that particular branch of analysis which treats of the solution of *indeterminate problems*, or such problems as admit of innumerably different solutions.

IN'DEX, in arithmetic and algebra, the number that shows to what power the quantity is to be raised; the exponent.——*Index*, in literature, an alphabetical table of the contents of a book.——*Index of a globe*, the little style, or gnomon, which being fixed on the pole of the globe, and turning round with it, points to certain divisions of the hour circle.——*Expurgatory Index*, a catalogue of prohibited books in the church of Rome.

INDIA-RUBBER. [See CAOUTCHOUC.]

INDIAN INK, a substance brought from China, used for water-colours. It is in rolls or in square cakes, and is said to consist of lamp-black and animal glue.

IN'DIANITE, a mineral, of a white or gray colour, occurring in masses having a foliated structure and shining lustre.

INDIAN RED, a species of ponderous earth, of a fine purple colour, and of a firm compact texture.

INDIC'ATIVE, in grammar, the first mood, or manner, of conjugating a verb, by which we simply affirm, deny, or indicate something; as, he *writes;* they *run*.

INDICTION (CYCLE OF), in chronology, a mode of computing time by the

FROM TIME IMMEMORIAL THE EGYPTIANS HAVE BEEN ACCUSTOMED TO HATCH EGGS BY ARTIFICIAL HEAT IN STOVES OR OVENS.

ARTIFICIAL INCUBATION IS SOMETIMES EFFECTED BY MEANS OF WARM BATHS, PARTICULARLY WHERE NATURAL HOT SPRINGS EXIST.



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space of fifteen years, instituted by Constantine the Great; originally the period for the payment of certain taxes. The popes, since the time of Charlemagne, have dated their acts by the year of the indiction, which was fixed on the 1st of January. At the time of the reformation of the calendar, the year 1582 was reckoned the tenth year of the indiction. Now this date, when divided by 15, leaves a remainder, 7, that is, three less than the indiction, and the same must necessarily be the case in all subsequent cases; so that, in order to find the indiction for any year, divide the date by 15, and add 3 to the remainder. It has no connexion with the motions of the heavenly bodies.

INDI'CTMENT, in law, a written accusation of one or more persons for a crime or misdemeanor, preferred to, and presented on oath by a grand jury. In determining whether there is a reasonable cause to put the accused upon his trial, the grand jury hear evidence only of the charge; and if twelve of them are satisfied of the truth of the charge, the indictment is then said to be found, and is publicly delivered into court.

IN'DICOLITE, in mineralogy, a variety of shorl or tourmalin, of an indigo or blue colour, sometimes tinged with green or azure.

INDI'GENOUS, an epithet denoting the native production of a country, in harmony with its climate, soil, and other productions: *not exotic*, when applied to plants.

IN'DIGO, a most valuable substance or dye, (known to the ancients under the name of *indicum*,) prepared from the leaves and stalks of the indigo-plant, which are steeped in water till the pulp is extracted, when the tincture is drawn off and agitated, till the dye begins to granulate. The flakes are then left to settle; the liquor is drawn off, and the indigo is drained in bags and dried in boxes. Indigo, as found in commerce, is in the form of little square or oblong cakes; it is of a dark blue colour, passing into violet-purple, is void of taste and smell, dull, but by rubbing with a smooth hard body, it assumes the lustre and hue of copper. Sulphuric acid is the only agent that dissolves indigo without destroying its colour. When it is put into this acid, a yellow solution is at first formed, which, after a few hours, acquires a deep blue colour. Indigo may be said to be a rare production of the vegetable kingdom, it hitherto having been found only in a small number of species belonging to the genera *indigofera*, *isatis*, and *nerium*; but it is almost exclusively from the first of these that the indigo of commerce is extracted. The species of *indigofera* are leguminous plants, herbaceous or shrubby, with alternate and generally pinnate leaves, and small blue, purple, or white flowers. It is computed that British India supplies three-fourths of all the indigo brought into European markets.

INDIGOFE'RA, Indigo, in botany, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria*. The species are shrubs, from some of which the indigo of commerce is obtained. [See Indigo.]

INDIVI'DUUM, in physiology, a body or particle, so small that it cannot be divided.

INDIVISIBLES, in geometry, such elements or principles as any body or figure may be supposed to be ultimately resolved into.

INDORS'ER, he who writes his name on the back of a bill of exchange. That which is written on the back is called the *indorsement*; and the person to whom the bill is assigned by indorsement, is the *indorsee*.

INDUCTION, in logic, a process of reasoning, by which we draw a general reference from a number of facts; contrasted with *deduction*, which applies to an inference from a single fact.——*Induction*, in law, the introduction of a clergyman in possession of a benefice or living to which he is collated, or presented. Induction is performed in the following manner: the clergyman commissioned takes the minister to be inducted by the hand, lays it upon the key of the church, the latch of the churchgate, or on the church wall, and pronounces these words, "By virtue of this commission, I induct you into the real and actual possession of the rectory of, &c. with all its appurtenances." Then, opening the church door, he puts the clergyman in possession. Induction may also be made by delivery of a clod or turf of the glebe.

INDUL'GENCE, in the Roman Catholic church, a remission of the punishment due to sins, granted by the pope or church, and supposed to save the sinner from purgatory. Clement VI. in his decretal, declares, that our Saviour has left an infinite treasure of merits, arising from his own sufferings, besides those of the Blessed Virgin and the saints; and that the pastors and guides of the church, and more especially the popes, who are the sovereign disposers of this treasure, have authority to apply it to the living, by virtue of the keys, and to the dead, by way of suffrage, to discharge them from their respective proportions of punishment, by taking just so much merit out of this general treasure, as they conceive the debt requires, and offering it to God. The historical origin of indulgences is traced to the public penances and the canonical punishments which the old Christian church imposed on the community, especially on those who did not remain firm unto martyrdom. When ecclesiastic discipline became milder, and the clergy more covetous, it was allowed to commute these punishments into fines, for the benefit of the church. In the pontificate of Leo. X. the flagrant abuse of indulgences became an open scandal; as the building of St. Peter's church had exhausted his finances, he began the sale of them in Germany, without waiting for the jubilee of 1525 (for during the period of jubilee the people were taught to believe that the efficacy of indulgences was doubled, and consequently the richest harvests were always reaped at that time). This first in-



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THAT PART OF THE INDIGO PLANT WHICH YIELDS THE COLOURING SUBSTANCE IS CONFINED ENTIRELY TO THE PELLICLE OF THE LEAVES.

WITH SULPHATE OF INDIGO, BLUES OF EVERY SHADE ARE DYED, AND ALSO GREENS, OLIVES, GRAYS, AND FAST GROUNDS TO LOGWOOD BLUES.

flamed the zeal of Luther; and to it may the reformation in Germany be mainly ascribed.

INDUL'TO, in ecclesiastical affairs, an Italian term for a dispensation granted by the pope, to do or obtain something contrary to the common law.

INER'TIA, or VIS INERTIÆ. [See the conclusion of the article GRAVITATION.]

INESCUTCH'EON, in heraldry, a small escutcheon borne within the shield.

IN ESSE (*Latin*) actually existing; distinguished from *in posse*, which denotes that a thing is not, but may be.

IN'FAMY, in law, that total loss of character or public disgrace which a convict incurs, and by which a person is rendered incapable of being a witness or a juror.

IN'FANCY, the period, physically considered, from birth to seven years, and legally, till 21, previously to which no one can inherit or execute any obligation, or incur any responsibility except for necessaries.

INFANTE, and INFANTA, appellations severally given to all the sons and daughters of the kings of Spain and Portugal, except the eldest. The dignity of the title consists in the pre-eminence implied by styling the children of the king, *the* children.

IN'FANTRY, in military affairs, the whole body of foot-soldiers, as distinguished from *cavalry*. The infantry are pre-eminently the moral power of armies; and on no class of troops has a general, who knows how to act on his soldiers, such influence. Infantry is divided into *light infantry* and that of *the line*. The latter forms the great mass, which is intended to fight in line, to decide attacks by the bayonet, and to make assaults. The light infantry is particularly intended to serve in the outposts, to act as sharp-shooters, to make bold expeditions, and harass and disquiet the enemy. Infantry is divided into battalions, companies, and platoons. The excellence of infantry depends on their good order in advancing and retreating, perfect acquaintance with their exercise and duties, in a just application of their fire, and great calmness both in assaulting and when assaulted in the square. The term *infantry* is said to have been derived from an event in Spanish history. An infanta of Spain, learning that the army commanded by her father had been defeated by the Moors, assembled a body of foot soldiers, and, with these, engaged, and totally defeated the enemy. This success raised the foot soldiers into a degree of estimation in which they had never before been held, and caused them to be, thenceforward, distinguished by the name of the character under whom this honourable distinction was gained.

INFECTION, the morbid effluvia of one body affecting the similar organs of another body, as small-pox, putridity, &c.; but it has been questioned whether this effect can be carried from place to place, and whether most diseases, called infectious, are not occasioned by local circumstances which affect certain subjects in the population. The *infection* of the plague and of the yellow fever, is said to be imported in ships and conveyed in clothing; persons are also said to take the *infection* from a diseased person, or from the air of apartments where the sick are confined.

INFER'NAL MACHINE, a name which has been given on more than one occasion to a terrific engine invented for the base purpose of assassination, the most memorable of which is here briefly recorded: On the 28th of July, 1835 (the day on which the commemoration of "The Three Glorious Days of July" annually takes place in Paris), as Louis Philippe, with his three sons and a numerous suite were riding along the Boulevard of the Temple, reviewing the national guards, they were fired at from a window of the second floor of a house in that neighbourhood. The king and his sons escaped, but sixteen persons were killed and eighteen wounded. Among the former were the duke of Treviso, colonels Rieussec and Lachasse, and four grenadiers of the national guard; and among the latter, four generals, all dangerously wounded. The *infernal machine* which caused the slaughter consisted of a number of gun-barrels, so arranged on a frame, as to be fired off in a volley; and the name of the wretch who executed it was Fieschi, by birth a Corsican, who was wounded by some of the barrels exploding, and, being immediately taken, was subsequently executed.

INFEODATION *of tithes*, in law, the granting of tithes to mere laymen.

INFE'RIÆ, in Roman antiquity, sacrifices offered to the infernal deities for the souls of the departed.

IN'FIDEL, one who disbelieves the inspiration of the Scriptures, or the divine original of Christianity.

INFILTRA'TION, the act or process of entering the pores or cavities of a body.

IN'FINITE. In mathematics, *infinite quantities* are such quantities as are either greater or less than assignable ones. And *infinite series*, a series considered as infinitely continued as to the number of its terms.

INFINITESI'MAL, a term denoting an indefinitely small quantity.

INFIN'ITIVE, in grammar, a mood expressing the action of the verb, without limitation of person or number, as *to love*.

INFIN'ITY, a term applied to the vast and the minute, to distances and spaces too great to be expressed in any numbers of measures, or too small to be expressed by any fraction; and one of the incomprehensible, but necessarily existing wonders of the universe. We apply *infinity* to God and his perfections. We speak of the infinity of his existence, his power, and his goodness.

INFIR'MARY, a charitable establishment where the poor may receive medical advice and medicines gratis.

INFLAMMATION, in medicine, a genus of disease in the class *pyrexiæ*, and order *phlegmasiæ*, of Cullen. It is characterised





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WHOEVER CAUSED THE CAPITAL CONVICTION OF A FELON, FORMERLY RECEIVED FORTY POUNDS, AND WAS EXEMPTED FROM PAROCHIAL OFFICES.

by heat, pain, redness, attended with more or less of tumefaction and fever. Inflammation is divided into two species, viz. *phlegmonous* and *erysipelatous*; the former known by its bright red colour, tension, heat, and painful tumefaction; the latter by its dull red colour, vanishing upon pressure, and the tumour scarcely perceptible. Besides this division, inflammation is either acute or chronic, local or general, simple or complicated with other diseases.

INFLECTED, in botany, an epithet for a leaf that is bent inwards at the end towards the stem: also for a calyx that is bent inwards.

INFLECTION, in optics, the bending or refraction of the rays of light, caused by the unequal thickness of any medium.——*Inflection*, in grammar, the change which a word undergoes in its termination, to express case, number, gender, mood, tense, &c.——*Point of Inflection*, in geometry, that point in which the direction of a curve changes from concavity to convexity, and *vice versâ*.

INFLORESCENCE, in botany, the manner in which plants flower, or in which flowers are attached to the stem by means of the peduncle

INFLUENZA (Italian, *influence*), in medicine, an epidemic catarrh, which has, at various times, spread over vast tracts of country. The French call it *la grippe*. In 1802 an influenza of this kind attracted universal attention, it having first appeared on the frontiers of China, and ultimately traversed the whole of the European continent. No sex, age, or state of health was exempted. It showed itself chiefly as a severe cold, attended with a catarrhal fever of a more or less inflammatory or bilious character; but though it was generally attended with much subsequent debility, it did not often terminate fatally. The term is often, but erroneously, applied to other kinds of epidemic diseases.

INFORMATION, in law, an accusation or complaint exhibited against a person for some criminal offence. An information differs from an indictment, inasmuch as the latter is exhibited on the oath of twelve men, but the information is only the allegation of the individual who exhibits it.—He who communicates to a magistrate a knowledge of the violations of law, is an *informer*: but he who makes a trade of laying informations, is termed a *common informer*, and is generally held in disesteem by society.

INFORMIS (*Latin*), something irregular in its form or figure. Hence, *stellæ informes*, in astronomy, are such of the fixed stars as are not reduced into any constellation.

INFRALAPSARIANS, in church history, an appellation given to such predestinarians as think the decrees of God, in regard to the salvation and damnation of mankind, were formed in consequence of Adam's fall.

INFRASCAPULARIS, in anatomy, one of the depressor muscles of the arm, which has its origin from the whole internal surface of the *scapula*, and its termination in the interior part of the *humerus*.

INFRASPINATUS, in anatomy, one of the abductor muscles of the arm, which has its origin in the cavity below the spine of the *scapula*.

INFULA, in Roman antiquity, a broad kind of fillet, made of white wool, which the priests used to wear round their heads. At later periods, the imperial governors wore the *infula* as a sign of dignity, and, as such, it was adopted, in the 7th century, by the bishops of the Roman Catholic church, who continue to wear it on solemn occasions. It is, in fact, the *mitre*; which the bishops of the church of England have in their coat of arms, but never wear it on the head.

INFUNDIBULIFORM, in botany, having the shape of a funnel, as a flower with a conical border rising from a tube.

INFUNDIBULUM *Cerebri*, in anatomy, a cavity of the brain, through which serous humours are discharged.

INFUSION, in pharmacy, a method of obtaining the virtues of plants, roots, &c. by steeping them in a liquid. Also the liquor in which the plants are steeped, and which is impregnated with their virtues or qualities.

INFUSORIA, in entomology, the fifth order of the class *Vermes*, consisting of insects too small to be seen by the naked eye, and found in fermenting liquids, as vinegar, stagnant water, &c. This order is scarcely distinguished from the *Intestina* and *Mollusca*, but by the minuteness of the individuals belonging to it, and their spontaneous appearance in animal and vegetable infusions. The process by which their numbers are increased is no less astonishing than their first production. Several of the genera often seem to divide themselves into two or more parts, and become new and distinct animals.

INGOT, a small bar of metal made of a certain form and size, by casting it in moulds. The term is chiefly applied to the small bars of gold and silver, intended either for coining or for exportation to foreign countries.

INGRAILED, in heraldry, an epithet for one of the crooked lines of which the ordinaries are composed, having its convex part outward, in distinction from the *invected*, which has the convex part inward.

INGRESS, in astronomy, a term applied to the entrance of the moon into the shadow of the earth in eclipses, the sun's entrance into a sign, &c.

INGRESS, EGRESS, and REGRESS, in law, words frequently used in leases of lands, which signify a free entry into, a going out of, and returning from some part of the premises leased to another.

INGRESSU, in law, a writ of entry, termed also a *præcipe quod reddat*.

INGRESSUS, in law, a duty which the heir at full age formerly paid to the chief lord for entering upon lands which had fallen to him.

INGUINAL, in anatomy, &c. any thing belonging to the groin. Hence *Inguinal*

UNDER THE OLD SYSTEM THE POLICE OFFICERS SEDUCED MANY POOR AND IGNORANT VICTIMS INTO THE COMMISSION OF FELONY.



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INK, THOUGH PALE WHEN FIRST WRITTEN WITH, BECOMES BLACK ON EXPOSURE TO THE AIR, THE COPPERAS ACQUIRING MORE OXYGEN.

*Hernia* is a hernia in that part, called by surgeons *bubonocele*.

INHE'RENT, that which is inseparable, distinguished from the accidental and acquired; as the *inherent* qualities of the magnet, &c.

INHERITANCE, a perpetual right or interest in an estate, invested in a person and his heirs. The term inheritance is used, not only where a person has lands or tenements by descent; but where he becomes seized in fee-simple, or fee-tail, by purchase. The inheritances mentioned in our law are either corporeal or incorporeal: the *corporeal* relate to lands, tenements, &c. that may be touched or handled; and the *incorporeal*, to such rights as are annexed to corporeal inheritances, as advowsons, tithes, annuities, offices, &c. There is likewise another inheritance, which is termed *several*, that is, where two or more hold lands or tenements severally; as when two persons hold to them and the heirs of their two bodies; in which case these two have a joint estate during their lives, but their heirs have several inheritances. According to the law of inheritances, the first child is always preferred, and the male before the female; and he that has the whole blood, before another that has only a part of the blood of his ancestor. Goods and chattels cannot be turned into an inheritance.

INHIBITION, in law, a writ to forbid a judge's proceeding in a cause that lies before him. This writ generally issues out of a higher court to an inferior, and is of much the same nature as a prohibition.

INHUMATION, in medicine, the term for burying a patient in warm or medicated earth.—In chemistry, a digestion made by burying the materials in dung or earth.

INJECTION, in anatomy, the act of filling the vessels of a dead subject with any coloured matter to show their ramifications.——*Injection*, in surgery, the forcing any liquid into the body by means of a syringe or pipe.

INJUNCTION, in law, a writ or prohibition granted in several cases; and for the most part grounded on an interlocutory order or decree, made in the court of chancery or exchequer, for staying proceedings either in courts of law, or ecclesiastical courts. When the reason for granting an injunction ceases, the injunction is dissolved.

INJURY, in a legal sense, any wrong or damage done to another, either in his person, rights, reputation, or goods. Whatever impairs the quality or diminishes the value of goods or property, is an *injury*; so also whatever impairs the health, weakens the mental faculties, or prejudices the character of a person, is an *injury*.

INK, a liquid used to write with. Black writing-ink is usually made of galls, copperas, gum-arabic, and water. The basis of common writing-ink, is the fine black, or dark blue precipitate formed by the soluble part of the gall-nut, and a solution of the sulphate of iron, or copperas. This precipitate is kept suspended by means of gum-arabic.——*Red Ink* is composed of Brazil wood, gum, and alum.——*Copying Ink*. Sugar mixed in ink prevents it from drying; this property renders it easy to take off an impression of any writing, and in this way letters, &c. are copied in merchants' counting-houses. The writing is to be made with ink containing sugar, and when done it is laid on the copying press, a blank sheet of proper paper damped is put over it, and by the pressure of the machine a fac-simile is struck off. On common occasions the impress may be made with a hot flat iron being passed over instead of the press.——*Sympathetic Ink*. Among the amusing experiments of the art of chemistry, the exhibition of sympathetic inks holds a distinguished place. With these the writing is invisible until some re-agent gives it opacity. We shall here mention a few out of a great number that a slight acquaintance with chemistry may suggest to the student. 1. If a weak infusion of galls be used, the writing will be invisible till the paper be moistened with a weak solution of sulphate of iron. It then becomes black, because these ingredients form ink. 2. If paper be soaked in a weak infusion of galls, and dried, a pen dipped in the solution of sulphate of iron will write black on that paper, but colourless on any other paper. 3. The diluted solutions of gold, silver or mercury, remain colourless upon the paper, till exposed to the sun's light, which gives a dark colour to the oxydes and renders them visible. 4. Most of the acids or saline solutions being diluted, and used to write with, become visible by heating before the fire, which concentrates them, and assists their action on the paper. 5. Diluted prussiate of potash affords blue letters when wetted with the solution of sulphate of iron. 6. The solution of cobalt in aqua regia when diluted, affords an ink which becomes green when held to the fire; but disappears again when suffered to cool: and 7. The oxyde of cobalt dissolved in acetous acid, and a little nitre added, will exhibit a pale rose colour when heated, which disappears when cold.——*Indelible Ink*. In a paper lately read before the Royal Society of Edinburgh, Dr. Traill, after an account of many unsuccessful experiments to produce a durable ink from metallic combinations, stated that he had attempted the composition of a carbonaceous liquid, which should possess the qualities of good writing ink. The inks used by the ancients were carbonaceous, and have admirably resisted the effects of time; but it was found that the specimens of writing on the Herculaneum and Egyptian *papyri* were effaced by washing with water. The result of Dr. Traill's experiments was, that he had obtained a fluid capable of readily uniting with carbon into a good durable ink, by a solution of the gluten of wheat in pyroligneous acid. The gluten is to be separated from the starch as much as possible, and dissolved in pyroligneous acid with the aid of heat. This forms a saponaceous fluid, which is to

ONE OF THE BEST SUBSTANCES FOR DILUTING INK IS A STRONG DECOCTION OF COPPER; IT ALSO IMPROVES ITS COLOUR AND LUSTRE.



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be tempered with water until the acid has the usual strength of vinegar; and then with each ounce of this fluid are to be ground from eight to ten grains of the best lamp-black, and one grain and a half of indigo. This ink is described as being of a good colour, flowing freely from the pen, drying quickly, not being affected by soaking in water, and remaining indelible although immersed in chemical solutions which efface common ink.

IN'LAND, in law, that part of any land or mansion which lay next to the mansion-house, and was used by the lord himself.—In geography, that which is situated in the interior of a country remote from the sea-coast.——*Inland Bills*, in commerce, bills payable in the country where they are drawn.

INLAY'ING, the art of diversifying cabinet-work, or working in wood or metal with several pieces of different colours, curiously put together.

IN LIM'INE, (*Latin*) in the outset; before any thing is said or done.

IN'NATE IDE'AS, in mathematics, principles or ideas supposed to be stamped on the mind from the first moment of its existence, and which it constantly brings into the world with it: a doctrine which has given rise to much discussion, and which the celebrated Locke took great pains to refute.

IN'NOCENTS' DAY, a festival observed in the church on the 28th of December, in memory of the children that were slain by command of Herod.

INNS OF COURT, houses or colleges where students in the law reside and are instructed. The principal of these societies at present are Lincoln's Inn, the Inner Temple, the Middle Temple, and Gray's Inn.——*Inns of Chancery*. These were probably so called because anciently inhabited by such clerks as chiefly studied the forming of writs, which regularly belonged to the cursitors, who are officers of chancery. These are Thavie's Inn, the New Inn, Symond's Inn, Clement's Inn, Clifford's Inn, Staple's Inn, Lyon's Inn, Furnival's Inn, and Bernard's Inn. These were formerly preparatory colleges for younger students, and many were entered here before they were admitted into the inns of court. At the present day, previously to being called to the bar, it is necessary to be admitted a member of one of the inns of court.

INOCULA'TION, in surgery, the operation of giving the small-pox to persons by incision. Inoculation is generally thought to have been introduced into Britain from Turkey by Lady Mary Wortley Montague, about the year 1721, her son having been inoculated at Constantinople, during her residence there, and her infant daughter being the first that underwent the operation in this country. It appears, however, to have been well known before this period both in the south of Wales and Highlands of Scotland. It is not clearly ascertained where inoculation really originated. It has been ascribed to the Circassians, who employed it as the means of preserving the beauty of their women; but it appears more probable that accident first suggested the expedient among different nations, to whom the small-pox had long been known, independently of any intercourse with each other.—We may here observe, that at this moment the most laudable efforts are being made by our government, at the recommendation of a vast body of eminent and influential members of the medical profession, to encourage the practice of vaccination, and thereby to eradicate a disease which is justly described as one of the most dreadful scourges of the human race. When a person is inoculated with the cow-pox, it is called vaccination. [See COW-POX.]——*Inocula'tion*, in gardening, a kind of grafting in the bud; as when the bud of the fruit tree is set in the stock or branch of another, so as to make several sorts of fruit grow on the same tree. The time to *inoculate* is when the buds are formed at the extremities of the same year's shoot, indicating that the spring growth for that season is complete.

INOR'DINATE *proportion*, in geometry, that in which the order of the terms compared is irregular or disturbed.

INORGAN'IC BODIES, such as have no organs, as the various kinds of minerals.

INOSCULATION, in anatomy, the joining the mouths of the capillary veins and arteries, by means of which the circulation of the fluids is carried on.

IN PRO'PRIA PERSO'NA *(Latin)*, in one's own person or character.

IN'QUEST, judicial inquiry. It may either be a jury to decide on the guilt of an accused person, according to fact and law; or to examine the weights and measures used by shopkeepers; decide on the cause of any violent or sudden death; or to examine into accusations before trial.

INQUI'RY, *writ of*, in law, a writ that issues out to the sheriff to summon a jury to inquire what damages a plaintiff has sustained in an action upon the case where judgment goes by default.

INQUISI'TION, OFFICE OF THE, an ecclesiastical court founded by Innocent III., who, in the twelfth century, sent Father Dominic and others, to excite the Catholic princes and people to extirpate heretics, to inquire into their number and quality, and to transmit a faithful account of these particulars. From the nature of their office, these agents were called *inquisitors*; and thus arose a tribunal which was received in all Italy, and throughout the dominions of Spain, excepting the kingdom of Naples and the provinces of the Netherlands. The principle of jurisprudence upon which the Inquisition proceeded was that of taking no other proof of a delinquent's guilt than his own confession. He was closely confined in a dark and dismal cell, where he was compelled to sit motionless and silent, and if his feelings found vent in a tone of complaint, the ever-watchful keeper warned him to be silent. He was accused of no specific charge; but told that





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ALL INSECTS WHICH LIVE IN SOCIETY, WHEN EXPOSED TO COLD, ARE OBSERVED TO CLUSTER TOGETHER, AS IF TO KEEP EACH OTHER WARM.

his guilt was known, and required to acknowledge it. If he confessed the crime of which he was accused, he pronounced his own sentence, and his property was confiscated. If he declared himself innocent, contrary to the testimony of the witnesses, he was threatened with torture. When sentence of death was pronounced against the accused, the holy *auto da fé* was ordered. At day-break the solemn sound of the great bell of the cathedral called the faithful to the dreadful spectacle. The condemned appeared barefooted clothed in the dreadful *san benito*, with a conical cap on their heads. The Dominicans, with the banner of the Inquisition, led the way. Then came the penitents, who were to be punished by fines, &c., and after the cross, which was borne behind the penitents, walked the unfortunate wretches who were condemned to be burnt alive. The dreadful procession was closed by monks and priests, and the *heretics* were then handed over to the executioner, who finished the horrid spectacle, in the presence of the multitudes, who assembled in throngs to witness the agonies in the victims! According to the estimate in Llorente's History of the Spanish Inquisition, the number of victims, from 1481 to 1808, amounted to 341,021. Of these, 39,912 were burnt, 17,659 burnt in effigy, and 291,456 were subjected to severe penance. The Inquisition had been abolished during the French rule in Spain; it was re-established by Ferdinand VII. in 1814; but on the adoption of the constitution of the cortes in 1820, it was again abolished.

INQUISITOR, in law, any officer, as the sheriff and the coroner, having power to inquire into certain matters.——*Grand Inquisitor* is the name given to a judge of the Inquisition.

INROLLMENT, in law, the registering or entering in the rolls of the Chancery and Queen's Bench, &c. any lawful act, as recognizances, &c.

INSANITY, mental derangement of any degree, from slight delirium to raving madness. It is, however, rarely used to express temporary delirium occasioned by fever, &c.

INSCRIBE, to engrave on a monument, pillar, &c.; or to commend by a short address, less formal than a dedication; as, to *inscribe* an ode or book to a prince.——*Inscribed*, in geometry, an epithet for a figure inscribed in another, so that all its angles touch the sides or planes of the other figure.

INSCRIPTI, in Roman antiquity, a name given to those who were branded with any ignominious mark after the manner in which slaves were treated.

INSCRIPTION, any monumental writing, engraved or affixed to a thing, to give a more distinct knowledge of it, or to transmit some important fact to posterity. The inscriptions mentioned by Herodotus and Diodorus Siculus, sufficiently show that this was the first method of conveying instruction to mankind, and transmitting the knowledge of history and sciences to posterity: thus the ancients engraved upon pillars both the principles of sciences, and the history of the world. Pisistratus carved precepts of husbandry on pillars of stone; and the treaties of confederacy between the Romans and Jews were engraved on plates of brass. Antiquarians have accordingly been very curious in examining the inscriptions on ancient ruins, coins, medals, &c.

INSECTA, in natural history, the fifth class of animals in the Linnean system, comprehending all insects except worms, which Linnæus has formed into a distinct class called *Vermes*. The *Insecta* are divided into seven orders, namely, the *coleoptera*, *lepidoptera*, *hemiptera*, *neuroptera*, *diptera*, and *apters*. Most *insects* pass through three states or metamorphoses, the larva, the chrysalis, and the perfect insect. [See ENTOMOLOGY.]

INSECTIVOROUS, an epithet for such birds, beasts, and fishes as feed or subsist on insects.

INSENSIBLE, that cannot be felt or perceived. Thus we say, the motion of the earth is *insensible* to the eye: a plant grows by *insensible* degrees: the humours of the body are thrown off by *insensible* perspiration.

INSOLATION, a term sometimes made use of to denote that exposure to the sun, which is made in order to promote the chemical action of one substance upon another. One of the most striking experiments of this kind is that of the exposure of vegetables (as fresh gathered cabbage leaves) in a glass jar of water to the rays of the sun, by the action of which a large quantity of pure oxygen gas is obtained.

INSOLVENCY, the state of a person who has not property sufficient for the payment of his debts. A bankrupt is an insolvent; but persons may be in a state of insolvency without having committed any of the specific acts which render them liable to a commission of bankruptcy.

INSOLVENT ACTS, certain acts of parliament passed for the purpose of releasing from prison, and sometimes from their debts, persons who cannot take the benefit of the bankrupt laws.

INSPIRATION, in theology, the conveying certain notices or monitions into the mind, by extraordinary or supernatural influence; or the communication of the divine will to the understanding by suggestions or impressions on the mind. "All Scripture is given by *inspiration* of God." 2 Tim. iii.—People are accustomed also to attribute the poetic spirit, or flights of the imagination, which are found in the writings of some poets, to *inspiration*; but, without judging harshly, we believe we may affirm, that the word is thereby much more often profaned than correctly applied.——*Inspiration*, in anatomy, the act of breathing or taking in the air by the alternate contraction and dilatation of the chest.

INSPISSATION, in chemistry, the

SEVERAL INSECTS APPEAR TO HAVE THE SENSE OF SMELLING, BUT THE ORGAN IN WHICH IT RESIDES HAS NOT BEEN DISCOVERED.



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bringing a liquor to a thicker consistence by evaporating the thinner parts.

INSTALLATION, the ceremony of inducting, or investing with any charge, office, or rank; as, the placing a dean or prebendary in his stall or seat, or a knight into his order.

INSTAL'MENT, in commercial transactions, the payment of a certain portion of a gross sum, which is to be paid at different times, or, as the phrase is, by *instalments*. In constituting a capital-stock by subscriptions of individuals, it is customary to afford facilities to subscribers by dividing the sum subscribed into instalments, or portions payable at distinct periods. In large contracts also, it is not unusual to agree that the money shall be paid by instalments.

IN'STANT, the smallest perceptible portion of time; or that wherein we perceive no succession.

INSTAN'TER, in law, instantly; without the least delay; as, the party was compelled to plead *instanter*.

IN STATU QUO *(Latin)*, a term signifying that condition in which things were left at a certain period; as when belligerent parties agree that their mutual relations should be *in statu quo*, or as they were before the commencement of a war; and the like.

INSTAURA'TA TER'RA, in archæology, land ready stocked or furnished with all things necessary to carry on the employment of a farmer.

INSTAU'RUM ECCLE'SIÆ, the vestments, plate, and all utensils belonging to a church.

IN'STINCT, that power of volition or impulse produced by the peculiar nature of an animal, which prompts it to do certain things, independent of all instruction or experience, and without deliberation, where such act is immediately connected with its own individual preservation, or with that of its kind. Indeed, it is manifest that instinct not only makes animals perform certain actions necessary to the preservation of the species, but often altogether foreign to the apparent wants of the individual; and often, also, extremely complicated. We cannot attribute these actions to intelligence, without supposing a degree of foresight and understanding infinitely superior to what we can admit in the species that perform them. The actions performed by instinct are not the effects of imitation, for the individuals that execute them have often never seen them done by others; they bear no proportion to the common intelligence of the species, but become more singular, more skilful, more disinterested, in proportion as the animals belong to the less elevated classes. They are so much the property of the species, that all the individuals perform them in the same manner, without any improvement. The duckling hastens to the water, the hen remains the proper time on her eggs during incubation, the beaver builds his curious habitation with a skill peculiar to the species, and the bees construct, with architectural accuracy, their waxen cells. Instinct, then, is the general property of the living principle, or the law of organised life in a state of action.

IN'STITUTE, or INSTITUTION, any society instituted or established according to certain laws, or regulations, for the furtherance of some particular object, such as colleges or seminaries for the cultivation of the sciences, Literary Institutes, Mechanics' Institutes, and others.——We apply the word *institution* to laws, rites, and ceremonies, which are enjoined by authority as permanent rules of conduct or of government; as, the institutions of Moses or Lycurgus. Also, a society of individuals for promoting any public object, as a charitable or benevolent *institution*.——The term is also used for the putting a clerk into possession of a spiritual benefice, previous to which the oath against simony, and the oaths of allegiance and supremacy, are to be taken.

IN'STRUMENT, MUSICAL, a machine or sonorous body, artificially constructed for the production of musical sounds. They are divided into three kinds, wind instruments, stringed instruments, and instruments of percussion.——*Mathematical instruments*, a common case of, contains,—a pair of plain compasses; a pair of drawing compasses; a drawing pen; a protractor; a parallel ruler: a plain scale; and a sector; besides black lead pencils.——*Instrument*, in law, a deed or writing drawn up between two parties, and containing several covenants agreed between them.

INSTRUMENTAL MU'SIC, music produced by instruments, as distinguished from *vocal* music; particularly applied to the greater compositions, in which the human voice has no part. Until the middle of the last century, the Italian composers used no other instruments in their great pieces than violins and bass-viols; at that time, however, they began to use the hautboy and the horn; and even to this day, the Italians use wind instruments much less than the French and Germans. In general, symphonies and overtures, solos, duets, terzettos, quartettos, &c., sonatas, fantasias, concerts for single instruments, dances, marches, &c., belong to instrumental music.

IN'SULATED, in architecture, an appellation given to such columns as stand alone, or free from any contiguous wall, &c., like an island in the sea; whence the name.

INSULATION, in electrical experiments, that state in which the communication of electrical fluid is prevented by the interposition of a non-electric body.

INSU'RANCE, in law and commerce, the act of providing against a possible loss, by entering into contract with one who is willing to give assurance; that is, to bind himself to make good such possible loss, upon the contingency of its occurrence. In this contract, the chances of benefit are equal to the insurer and the assurer. The first actually pays a certain sum, and the

SOME PHILOSOPHERS DENY THAT IN HUMAN NATURE THERE IS ANY POWER OR PROPENSITY WHICH CAN PROPERLY BE CALLED INSTINCT.

THE STRUCTURE OF A HONEY-COMB IS AN EFFECT OF INSTINCT WHICH CANNOT BE COMPOUNDED WITH THE OPERATIONS OF REASON.



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IN THE REIGN OF KING JOHN THE KINGDOM OF ENGLAND LAY UNDER A FATAL INTERDICT FOR ABOVE SIX YEARS TOGETHER.

latter undertakes to pay a larger, if an accident should happen. The one, therefore, renders his property secure; the other receives money, with the probability that it is clear gain. The instrument by which the contract is made, is denominated a *policy*, and the stipulated consideration is called the *premium*. These are generally for protection against losses by fire, or risks at sea. Policies on *lives* are another description of this contract, whereby a party, for a certain premium, agrees to pay a certain sum, if a person, to whose life it relates, shall die within a time specified, or to pay the executors of the insured a certain sum at the time of his death. These policies, however, usually make an exception of death by suicide. According to general practice, a life insurance is seldom made by the payment of a single sum when it is effected, but almost always by the payment of an *annual premium* during its continuance, the first being paid down at the commencement of the insurance. An individual, therefore, who has insured a sum on his life, would forfeit all the advantages of the insurance, were he not to continue regularly to make his annual payments. But by attending to this, not only does he materially augment the comfort and well-being of those dependent on him; but, being thus led to contract a habit of saving for this particular object, it is probable that the habit will acquire additional strength; while his mind will be relieved from the anxiety attendant on that distressing state of fear and uncertainty, which must ever aggravate the terrors of death to one who contemplates the prospect of leaving behind him a destitute family.

INTA'GLIOS, precious stones on which are engraved the heads of eminent men, inscriptions, &c., such as are set in rings, &c. [See GEMS.]

INTEGER, in arithmetic, a whole number, in contradistinction to a fraction.—— *Integrant particles* of bodies, are those into which bodies are reduced by solution or mechanical division, as distinct from *elementary* particles. —— *Integral calculus*, in algebra, the finding of the integral from the differential, which answers to the inverse method of fluxions.

INTEGU'MENT, in anatomy, a covering or membrane, which invests any particular part of the body. The skin of seeds and the shells of crustaceous animals are also denominated *integuments*.

INTELLECT, that faculty of the human mind, which receives or comprehends the ideas communicated to it; otherwise called the *understanding*.

INTEND'ANT, a word much used in France, denoting a person who has the charge, direction, or management of some office or department; as an *intendant* of marine, an *intendant* of finance, &c.

INTER'CALARY, in chronology, an epithet given to the day inserted in leap-year. ——In medicine, *intercalary days* are those during the course of a distemper in which nature is excited to throw off her load unseasonably, as the 3d, 5th, 9th, 13th, and 19th.

INTERCES'SION, in Roman antiquity, the act of a tribune of the people, whereby he inhibited the act of another magistrate, or prevented the passing of a law in the senate, which was usually done by the single word *veto*.

INTERCOLUMNIA'TION, in architecture, the space between two columns, which is always to be proportioned to the height and bulk of the columns.

INTERCOS'TAL, in anatomy, an appellation given to such muscles, nerves, arteries and veins as lie between the ribs.—— The great *intercostal nerve* arises in the cavity of the cranium, from a branch of the sixth and one of the fifth pair, uniting into one trunk, which passes out of the cranium through the carotid canal, and descends by the sides of the bodies of the vertebræ of the neck, thorax, loins, and os sacrum; receiving in its course the small accessory branches from all the thirty pair of spinal nerves.

INTERDICT, an ecclesiastical censure, by which the church of Rome forbids the performance of divine service in a kingdom, province, town, &c. This censure has been frequently executed in France, Italy, and Germany; and, in the year 1170, pope Alexander III. put all England under an *interdict*, forbidding the clergy to perform any part of divine service, except baptizing infants, taking confessions, and giving absolution to dying penitents.

INTEREST is the sum of money paid or allowed for the loan or use of some other sum, lent for a certain time, according to a fixed rate. The sum lent is called the *principal*: the sum agreed on as interest, is called the *rate per cent.*, and the principal and interest added together is called the *amount*. Interest is distinguished into *simple* and *compound*. Simple interest is that which is paid for the principal, or sum lent, at a certain rate or allowance made by law, or agreement of parties, whereby so much as 5*l.* or 6*l.* or any other sum, is paid for 100*l.* lent out for one year; and more or less proportionally for greater or lesser sums, and for more or less time.——*Compound interest* is when the interest for one year is added to the principal, and the interest calculated in the following year on that accumulation. In this manner the principal nearly doubles every 14 years. The accumulation of money, when placed at compound interest, after a certain number of years, is exceedingly rapid, and in some instances appears truly astonishing. One penny, put out at 5 per cent. compound interest, at the birth of Christ, would, in 1810, have amounted to a sum exceeding in value 357,000,000 of solid globes of standard gold, each in magnitude as large as this earth! (the exact number of globes, according to this computation, is 357,474,600); while at simple interest, it would have amounted to only 7*s.* 7¾*d.* [We give this on the authority of the "Conversations' Lexicon," without stopping to ascertain its

IT WAS NOT UNFREQUENT, IN THE MIDDLE AGES, FOR PRINCES TO CAUSE THE TERRITORIES OF THEIR VASSALS TO BE PUT UNDER INTERDICT.



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accuracy; but recommend it as an arithmetical exercise to our young friends.]——*Interest*, in arithmetic, a rule by which the interest of money is computed.——*Interest*, in law, is generally taken for a chattel real, or a lease for years, &c., but more for a future term.

INTERFOLIA'CEOUS, in botany, an epithet for flowers or peduncles that are between opposite leaves which are placed alternately.

INTERJEC'TION, in grammar, an indeclinable part of speech, serving to express some passion or emotion of the mind; as, "Alas! my fondest hopes are now for ever fled."

INTERLOC'UTORY *Order* or *Decree*, in law, an order that does not decide the cause, but only some matter incident thereto, which may happen in the intermediate stage of a cause; as when, in chancery or exchequer, the plaintiff obtains an order for an injunction until the hearing of the cause; which order, not being final, is called interlocutory.

INTERLUDE, in the drama, a light entertainment exhibited on the stage between the principal performance and the afterpiece. At present, the term *interlude* is applied principally to small comic operas, written for two or three persons. In ancient tragedy, the chorus sung the interludes between the acts.

INTERLU'NIUM, in astronomy, the time in which the moon has no appearance or phases.

INTERMIT'TENT *Fevers*, such fevers as subside and soon return again. These fevers are distinguished into various classes, according to the interval of time between the relapse into them, as *tertian fever*, *quartan* fever, &c.

INTERNO'DIUM, in botany, the space contained between any two knots or joints of the stalk of a plant.

INTEROSSEI PE'DIS, in anatomy, seven muscles of the toes, which serve to extend them.——*Interossei musculi manus*, the muscles of the hand between the bones, which serve to extend the fingers: they are divided into external and internal.

INTERPOLA'TION, in philological criticism, the insertion of spurious passages in the writings of some ancient author.——In mathematics, that branch of analysis which treats of the methods by which, when a series of quantities succeeding each other, and formed all according to some determinate law, are given, others subject to the same law may be interposed between them.

INTERREG'NUM, the time during which a throne is vacant, in elective kingdoms; for in such as are hereditary, like that of England, there is no such thing as an *interregnum*.

INTERROGA'TION, in grammar, a character or point (?) denoting a question, as, Do you love me?——*Interrogation*, in rhetoric, a figure containing a proposition in the form of a question.

INTERROG'ATORY, in law, a question in writing demanded of a witness in a cause, who is to answer it under the solemnity of an oath.

INTERSEC'TION, in mathematics, the cutting of one line or plane by another: thus we say, that the mutual intersection of two planes is a right line.

INTERSTEL'LAR, situated beyond the solar system.

IN'TERVAL, in music, the difference between the number of vibrations, produced by one sonorous body of a certain magnitude and texture, and of those produced by another of a different magnitude and texture, in the same time. The ancients divided the *intervals* into simple or uncomposite, which they call *diastems*, and composite intervals, which they call *systems*. Modern musicians consider the *semitone* as a simple interval, and only call those composite which consist of two or more semitones.

INTERVERTEBRA'LES, in anatomy, the muscles which draw the vertebræ nearer to each other.

INTES'TINA, in zoology, an order in the Linnæan system, of the class *Vermes*, including earthworms and leeches.

INTES'TINES, the bowels of an animal, consisting of small ones disposed in convolutions, four or five times as long as the animal, and of large ones called the *cæcum*, the *colon*, and the *rectum*; the whole having a motion backwards and forwards, called the peristaltic motion. The small intestines have internally folds, called *valvulæ conniventes*; and the large intestines have muscular bands.

INTONA'TION, in music, the act of sounding the notes in the scale with the voice, or any other given order of musical tones. It consists, in fact, in giving to the tones of the voice or instrument that occasional impulse, swell, and decrease, on which, in a great measure, all expression depends.

INTOXICA'TION, the state produced by the excessive use of alcoholic liquids. It may be called *progressive madness*. Its first stage is marked by an increased circulation of the blood; the consciousness is not yet attacked, the fancy is more lively, and the feeling of strength and courage is increased. In the second stage, the effect on the brain is more decided: the peculiarities of character, and the faults of temperament, which in his sober moments the individual could control and conceal, manifest themselves without reserve. Consciousness, in the next stage, becomes more weakened; the balance of the body cannot be kept, and dizziness attacks the brain. In the next degree, the soul is overwhelmed in the tumult of animal excitement; consciousness is extinguished; the organs of speech refuse to perform their office, or the tongue pours forth an incoherent jargon; the face is red and swollen; the eyes are protruded and meaningless; and the drunkard falls into a state of stupor and insensibility.

INTROSUSCEP'TION, the falling of one part of an intestine into another, or

THE ONLY CASE IN WHICH COMPOUND INTEREST IS ALLOWED BY THE LAWS OF GREAT BRITAIN, IS THAT OF ANNUITIES.

IN THE HISTRIONIC, AS IN THE MUSICAL ART, A GOOD INTONATION IS ONE OF THE FIRST QUALIFICATIONS FOR A PROFESSOR.



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INVENTIONS OWN THEIR ORIGIN AS DISCOVERIES DO, EITHER TO CHANCE, A SUDDEN HAPPY THOUGHT, OR TO PATIENT REFLECTION.

the passing of one part within another, causing a duplicature of the intestine.

INTRAN'SITIVE, in grammar, an epithet for a verb that expresses actions that do not *pass over* to an object, as I *go*, I *come*, I *sleep*, &c.

IN TRAN'SITU, *(Latin)* during the passage from one place to another.

INTRENCH'MENT, in fortification, any work that shelters a post against the attacks of an enemy.

INTRU'SION, in law, a violent or unlawful seizing upon lands or tenements.

INTUI'TION, mental view or perception; the instantaneous act of the mind in perceiving the agreement or disagreement of two ideas.

INU'LA, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. The species are principally perennials, and natives of the East.

IN'ULINE, in chemistry, a white and pulverulent starch-like substance, extracted from the root of the *Inula Stellerium*, or elecampane. It exists also in the roots of colchicum and pellitory.

INUN'DATÆ, in botany, one of the Linnæan natural orders, consisting of aquatic plants.

IN VAC'UO, *(Latin)* in empty space, or in space comparatively empty.

IN'VALID, a person who is maimed, wounded, or otherwise disabled. In military or naval affairs, a soldier or sailor wounded or disabled in war, and unfit for service. The noble establishments at Greenwich and Chelsea for the *invalids* of the navy and army are among the proudest monuments of the British nation.

INVENTION, in a general sense, the contrivance and production of something that did not before exist.——In painting, the finding or choice of the objects which are to enter into the composition of the piece.——In rhetoric, the finding and selecting of arguments to prove and illustrate the point in view.——In poetry, it is applied to whatever the poet adds to the history of the subject.

INVER'SE RATIO, is when the effect or result of any operation is *less* in proportion as the cause is *greater*, or is *greater* in proportion as the cause is *less*.

INVER'SION, in geometry, the changing antecedents into consequents in the terms of proportion, and the contrary.——In grammar, a change of the natural order of words.——In music, the change of position, either of a subject or of a chord.

INVER'TENS *somnus*, in botany, a term denoting the sleep of plants, during which the leaves are inverted.

INVES'TITURE, in law, the open delivery of seisin or possession. There was anciently a great variety of ceremonies used upon investitures. At first they were made by a certain form of words; afterwards, by such things as had the greatest resemblance to the thing to be transferred: thus where lands were intended to pass, a turf, &c. was delivered by the granter to the grantee.

INVOCA'TION, in theology, the act of addressing God in prayer for his assistance and protection.——*Invocation*, in poetry, an address at the beginning of a poem, wherein the poet calls for the assistance of some divinity, particularly of his muse, or the deity of poetry. In the course of an epic poem several invocations may occur, particularly when any thing extraordinary is to be related; but the first invocation is always the most considerable.

IN'VOICE, in commerce, a written account of the particulars of merchandize shipped or sent to a purchaser, factor, &c. with the value or prices and charges annexed.

INVOLU'CRUM, in botany, a sort of calyx or cup, which surrounds a number of flowers together, every one of which has, besides this general cup, its own particular perianthium.

INVOLU'TION, in algebra, the raising any quantity to a given power by multiplying it into itself the required number of times; thus, the cube of 3 is got by multiplying 3, the root, into itself twice, as $3 \times 3 \times 3 = 27$. Here 27, the third power of 3, is found by *involution*, or multiplying the number into itself, and the product by the same number.

IODINE, in chemistry, a poison, of a black colour and metallic lustre, procured from kelp; resembling chlorine in its odour, and power of destroying vegetable colours. Iodine is incombustible, but with azote it forms a curious detonating powder. It is scarcely at all soluble in water, but is readily taken up by alcohol and ether, to which it imparts a reddish-brown colour. The test made use of for the detection of iodine in any solution, is starch, with which iodine has the property of uniting, and of forming with it a compound, recognizable by its deep blue colour. For the investigation of its properties we are chiefly indebted to Gay Lussac and Sir Humphry Davy.——*Iodic Acid* is formed by the combination of iodine with oxygen.——*Iodate*, a salt formed by the combination of iodic acid with salifiable bases.——*Iodide*, a substance formed by the union of iodine with any of the metals; as, the iodide of mercury, which is a beautiful red powder. The iodides of potassium and iron are supposed to possess great powers in resolving glandular swellings.

ION'IC. The *Ionic Order* is the third of the five orders of architecture, being a kind of mean between the robust and delicate orders. The first idea of this order was given by the people of Ionia, who, according to Vitruvius, formed it on the model of an elegantly shaped young woman; whereas the Doric had been formed on the model of a strong robust man. The height of its column is nine times the diameter: its capital is adorned with volutes, or ram's horns, but it has no leaves of the acanthus, like the Composite.——The *Ionic Sect* of philosophers was founded by Thales, a native of Miletus in Ionia, which occasioned his followers to assume the appellation of *Ionic*. Thales was succeeded by Anaxi-

INVESTITURES, IN THEIR ORIGINAL RISE, WERE PROBABLY INTENDED TO DEMONSTRATE THE ACTUAL POSSESSION OF THE LORD.



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mander and Anaximenes, both of Miletus; Anaxagoras Clazomenius succeeded them, and removed his school from Asia to Athens, where Socrates was his scholar. They held that water was the principle from which all corporeal things were derived, and into which they will finally be resolved again. They admitted but *one* world, which they regarded as the work of God, and as animated by him as its soul. They maintained that the universe was governed by destiny, by which they meant the immutable laws of Providence. They asserted matter to be changeable, but denied that it was divisible to infinity. They believed the existence of *spirits* or *demons*, as intelligent and immortal substances. The soul, according to their doctrine, existed after it left the body; and they attributed to inanimate things a kind of torpid soul.——*Ionic mood*, in music, a light and airy sort of music among the ancients, consisting of soft and melting strains.

IPECACUAN'HA, a medicinal root, produced in South America, and introduced into Europe in the 17th century, when it was much esteemed for the cure of dysenteries. Its taste is bitter and acrid, covering the tongue with a kind of mucilage. It is one of the safest and mildest emetics with which we are acquainted, and is administered as a powder, in the tincture, or infused in wine.

IRID'IUM, in mineralogy, a metal discovered in 1803, and which received its name from its different solutions presenting all the colours of the rainbow. Iridium occurs only in the ore of platinum, is the most refractory of all the metals, and appears as a gray metallic powder.

I'RIS, in botany, the flower-de-luce or flag-flower, &c.; a plant with a bulbous root, which bears a beautiful blue flower. There are many species of it, as the common yellow or water iris, the flag iris, the dwarf iris, &c.——*Iris*, in anatomy, a variegated circle which surrounds the pupil of the eye, by means of which that opening is enlarged or diminished.——The changeable colours which sometimes appear in the glasses of telescopes, &c.——A coloured spectrum which a triangular glass prism casts on a wall, when placed at a due angle in the sun-beams.

I'RON *(ferrum)*, in mineralogy, one of the imperfect metals, but the hardest and most useful, as well as the most plentiful of any. It is found rarely in native masses; but in ores, mineralized by different substances, it abounds in every part of the earth. It is of a livid whitish colour, inclined to gray, but when cut, of a bluish gray. It has a metallic lustre, fine-grained texture, and is very brittle. Next to tin, it is the lightest of all metallic substances, and next to gold, the most tenacious. Iron is attracted by the magnet, and is capable of becoming magnetic; but it retains this quality only a short time. It is the only metal which takes fire by the collision of flint. Heated in contact with air, it becomes oxydized. It combines with carbon, and forms what is called steel. It combines with phosphorus in a direct and an indirect manner, and unites with sulphur readily by fusion. All acids act upon iron. Nitrate of potash detonates very vigorously with it. Iron is likewise dissolved by alkaline sulphurets; and it is capable of combining with a number of metals. When rubbed it has a slight smell, and it imparts to the tongue a peculiar astringent taste, called chalybeate. In a moist atmosphere, iron speedily oxydizes, and becomes covered with a brown coating, called rust. Iron is remarkable for the effect fire has on it, in rendering it more ductile; most of the other metals are brittle while they are hot; but this is most of all malleable, as it approaches nearest to fusion. It grows red-hot long before it melts, and is known to be approaching towards that state, by its becoming whiter, and by its sparkling: if taken from the fire as soon as it runs, it is found to be more malleable for the fusion; but if it be kept long in that state, its sulphur dissipates in form of a white smoke; the metal after this becomes much more brittle, and in fine runs into a bluish glass. Iron, exposed to the focus of a great burning-glass, instantly grows red-hot, then turns whitish, sparkles and flames, and immediately after melts; soon after this the greatest part of it flies off in sparks, which appear very bright, and, if caught upon paper, are found to be so many little globular bodies, all hollow like bomb-shells: the remainder runs into a bluish or purplish glass; and this glass, exposed again to the same focus, on a piece of charcoal, takes up, from the vegetable fuel, the sulphur or inflammable principle it had lost, and becomes true iron again. Upon the whole, the effects of a common, and those of a solar fire, on this body, concur to prove that it consists of vitriolic salt, a vitrifiable earth, and a peculiar bituminous matter, not found in any of the other metals. When perfectly pure, it readily melts with gold and silver, and unites with them in fusion; but if it be impure, it separates itself, and forms a distinct regulus above the surface of the other. On being heated red-hot, it increases in bulk and in weight: but it returns to its former gravity and dimensions when cold. In the great iron works, the ore, broken into small pieces, and mixed with lime or some other substance to promote its fusion, is thrown into the furnace; and baskets of charcoal or coke, in due proportion, are thrown in along with it. A part of the bottom of the furnace is filled with fuel only. This being kindled, the blast of the great bellows is directed on it, and soon raises the whole to a most intense heat: this melts the ore immediately above it, and the reduced metal drops down through the fuel and collects at the bottom. The rest sinks down to fill up the void left by the consumed fuel, and this, in its turn, comes next in the way of the bellows, and is also reduced. More ore and fuel are supplied above, and the operation goes on

till the melted metal at the bottom, increasing in quantity, rises almost to the aperture of the blast; it is let out by piercing a hole in the side of the furnace, and then forms what are called *pigs* of cast iron.—In summing up the various uses of iron, we will quote the words of Dr. Ure, who very truly observes, "it accommodates itself to all our wants, our desires, and even our caprices; it is equally serviceable to the arts, the sciences, to agriculture, and war; the same ore furnishes the sword, the ploughshare, the scythe, the pruning-hook, the needle, the graver, the spring of a watch or of a carriage, the chisel, the chain, the anchor, the compass, the cannon, and the bomb. It is a medicine of much virtue, and the only metal friendly to the human frame." To this let us add the astounding fact, that the total production of iron in Great Britain in one year, is, as nearly as can be calculated, *one million of tons!*——*Action of Sea and River Water on Iron.* At a late meeting of the British Association, Messrs. Mallet and Davy communicated the results of their experiments, which are of great importance to the civil engineer. They find that pure oxygen and pure water are both neutral bodies in regard to iron, and only act on it together; that the larger the quantity of uncombined or suspended carbon in cast iron, the more is it acted on by these agents; so much so, that soft Scotch or Irish cast iron may be used to protect grey or chilled cast iron from all corrosion. With respect to the protection of iron by electro-chemical agency, zinc will only protect iron for a time: the oxyde of zinc becoming transferred to the surface of the iron, when all protection is at an end.

I'RON-CLAY, in mineralogy, a basaltic substance, of a reddish-brown colour, occurring massive or vesicular.

I'RON-PLINT, in mineralogy, a subspecies of quartz, with a fracture more or less conchoidal, shining and nearly vitreous. It occurs either in six-sided prisms, in small grains, and also in masses. Its varieties are red, yellow, and greenish.

I'RONY, a mode of speech, or writing, expressing a sense contrary to what the speaker or writer means to convey. When irony is uttered, the dissimulation is generally apparent from the manner of speaking, which may be either accompanied by an arch look or by affected gravity.

IRRITABIL'ITY, in medicine, a property peculiar to muscles, by which they contract upon the application of certain stimuli, without consciousness of action. This power may be seen in the tremulous contraction of muscles when lacerated, or when entirely separated from the body in operations. Even when the body is dead to all appearance, and the nervous power is gone, this contractile power remains till the organization yields, and begins to be dissolved. Thus there is a great distinction between the *irritability* of muscles and the *sensibility* of nerves. All the muscles of voluntary motion answer to stimuli with a quick and forcible contraction; and yet they hardly feel the stimuli by which these contractions are produced, or, at least, they do not convey that feeling to the brain. There is no consciousness of present stimulus in those parts which are called into action by the impulse of the nerves, and at the command of the will: so that muscular parts have all the irritability of the system, with but little feeling, and that little owing to the nerves which enter into their substance; while nerves have all the sensibility of the system, but no motion.

ISA'IAH, or *the Prophecy of* ISAIAH, a canonical book of the Old Testament. Isaiah is the first of the four great prophets, the other three being Jeremiah, Ezekiel, and Daniel. The style of Isaiah is noble, sublime and florid. Grotius calls him the Demosthenes of the Hebrews. He had the advantage, above the other prophets, of improving his diction by conversing with men of the greatest learning and elocution; and this added a sublimity, force, and majesty to what he said. He boldly reproved the vices of the age in which he lived, and openly displayed the judgments of God that threatened the Jewish nation; at the same time denouncing vengeance on the Assyrians, Egyptians, Ethiopians, Moabites, Edomites, Syrians, and Arabians, who were instrumental in inflicting those judgments. He foretold the deliverance of the Jews from their captivity in Babylon, by the hands of Cyrus king of Persia, a hundred years before it came to pass; but the most remarkable of his predictions are those concerning the Messiah, in which he not only foretold his coming in the flesh, but many of the great and memorable circumstances of his life and death. The whole, indeed, bears the stamp of genius and true inspiration.

ISCHIAD'IC, in medicine, an epithet for that rheumatic affection of the hip called *sciatica*.

ISCHNOPHO'NIA, in medicine, a shrillness of the voice; but more frequently an impediment or hesitation of speech.

IS'CHURY, in medicine, a stoppage or suppression of urine.

IS'ERINE, a mineral of an iron black colour, and of a splendid metallic lustre, occurring in small obtuse angular grains.

I'SINGLASS, in commerce, a substance, consisting chiefly of gelatine, which is found to be composed of the sounds, or air-bladders, of those fish from which this membrane may be separated with sufficient ease. The sounds of fresh-water fish are to be preferred, because these are the most transparent, flexible, and delicate; but those of the cod and ling are collected by the fishermen of Newfoundland and Iceland. The coarser sorts of isinglass are made of the intestines of the fish. The preparation of isinglass, from salt-water fish, is merely that of freeing the sound from the membranes out of its sides, with the knife; putting it, for a few minutes, in lime-water, that its oily principle may be absorbed; and, lastly,



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THE GRAPHITE OF CAST IRON IS OBTAINED IN SCALES OF A METALLIC ASPECT, BUT THE COMBINED CARBON IS CONTAINED IN A POWDER.

PURE IRON, IN SPECIFIC GRAVITY, IS 7.7; BUT IT MAY BE MADE 7.8 BY HAMMERING. THE SPECIFIC GRAVITY OF CAST IRON IS 7.201.

washing it in clean water. The sounds of fresh-water fish do not need the whole of this process. The vermicular form in which isinglass is usually seen, is supposed to have been given to it by its original manufacturers, the Russians, rather to conceal its essence, than with any other view. Isinglass boiled in milk forms a mild, nutritious jelly; and when flavoured by the art of the cook, is *blancmanger*. It is also used in fining fermented liquors, and for various other purposes.

IS'LAMISM, the practical as well as the doctrinal tenets of the Mohammedan religion, embracing the whole of their civil and religious polity.

I'SLAND CRYS'TAL, a transparent stone of the nature of spar, a piece of which laid upon a book, every letter seen through it will appear double. It was originally found in Iceland, whence it was called Iceland or Island Crystal, and is to be met with in France and other parts of Europe.

ISOCH'RONAL or ISOCH'RONOUS, an epithet applied to the vibrations of a pendulum, *i. e.* performed in the same space of time.

ISOMORPH'OUS, an epithet for any admixture capable of retaining its primitive form in a compound.

ISOPERIMET'RICAL FIG'URES, such as have equal perimeters or circumfereuces.

ISOTON'IC, in music, consisting of intervals, in which each concord is alike tempered, and in which there are twelve equal semitones.

IS'SUANT, in heraldry, an epithet for a lion or other beast coming out of the bottom line of any chief or fess.

IS'SUE, in law, the legitimate offspring of parents. Also, the profits arising from lands, tenements, fines, &c.——The point of matter *at issue* between contending parties in a suit, is when a thing is affirmed on the one side, and denied on the other.——*Issue*, in medicine, an artificial aperture, giving vent to noxious humours in the body.

IST'HMIAN GAMES, so called because they were celebrated in the Isthmus of Corinth, which joins the Peloponnesus to the Continent, at the temple of Isthmian Neptune, which was surrounded with a thick forest of pine. They were originally held in the night, and had perhaps fallen into disuse, when Theseus restored them, and ordered them to be celebrated in the day. The contests were of the same kind as at the Olympic games; and so great was the concourse at these games, that only the principal people, of the most remarkable cities, could have place.

IST'HMUS, in geography, a neck or narrow slip of land joining a peninsula to a continent, as the isthmus of Corinth; or by which two continents are connected, as the isthmus of Darien, which connects North and South America.

ITAL'IAN, a native of Italy, or the language spoken by its inhabitants. The origin of this beautiful and most harmonious tongue, is involved in great obscurity; it has, however, generally been supposed, that the Italian originated from a mixture of the classical Latin with the languages of the barbarians who overran Italy; indeed, the language spoken at the present day by the well educated classes is essentially a Latin dialect. With regard to the general state of Italian literature, it may be affirmed to be in a less flourishing state than that of the different countries by which Italy is surrounded; yet nowhere have more illustrious poets appeared than those of which Italy can boast; while she stands unrivalled among the moderns for her sculptors, her painters, and her musicians.

ITAL'ICS, in printing, characters or letters (first used in Italy) which stand inclining; thus—*Italic*; and which are often used by way of distinction from Roman letters, for emphasis, antithesis, or some peculiar importance attached to the words in which they are employed.——*Italicise*, to write or print in Italic characters.

ITAL'IC SECT, the name of a sect of ancient philosophers, founded by Pythagoras; so called, because that philosopher taught in Italy, spreading his doctrines among the people of Tarentum, Metapontus, Heraclea, &c.

I'VORY, the tusks and teeth of the elephant, and of the walrus or sea-horse; a hard, solid substance, of a fine white creamy colour, and greatly esteemed for the fineness of its grain, and the high polish it is capable of receiving. That of India loses its colour and becomes yellow; but that of Achem and Ceylon is free from this imperfection. Ivory is extensively used by cutlers in the manufacture of handles for knives and forks; by miniature painters for their tablets; by turners, in making numberless useful and ornamental objects, as well as for chess-men, billiard balls, toys, &c.; also by musical and philosophical instrument makers; comb-makers; and by dentists for making artificial teeth; for which last-mentioned purpose the ivory of the walrus is preferred. It appears that no less than 4000 male elephants are annually destroyed in order to obtain the number of tusks which, on an average, are imported into this country. The western and eastern coasts of Africa, the Cape of Good Hope, Ceylon, India, and the countries to the eastward of the straits of Malacca, are the great marts whence supplies of ivory are derived.

IVY, in botany, a parasitic creeping shrub, the *Hedera helis* of Linnæus. The leaves are smooth and glossy, varying much in form, from nearly oval to five-lobed, and their perpetual verdure gives the plant a very beautiful appearance. It clings to the sides of old walls, rocks, &c., and sometimes ascends to the summit of the tallest trees. *Ground Ivy*, a perennial plant; the *Glecoma hederacea*.

IX'IA, in botany, a genus of plants, class 3 *Triandria*, order 1 *Monogynia*. The species are bulbs.

IXO'RA, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*. The species are perennials, natives of the East and West Indies.



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# J.

J, when reckoned a distinct letter, as it now always is, (instead of I being substituted for it, as formerly), is the tenth in the alphabet, and has a soft sound in English, like that of the *g* in *genius*; as *jet, jack, Jones*.

JABIRU, in ornithology, an aquatic fowl of the crane kind.

JACAMAR, in ornithology, a description of birds arranged by Linnæus under the genus *Alcedo*, but placed by Cuvier in a separate genus, *Galbula*. They are about the size of a lark, and have a brilliant plumage. There are several species, some of which are natives of India, but the most beautiful are met with in South America.

JACINTH, the HYACINTH [which see.]

JACK, in mechanics, a well-known engine of common use, for raising great weights of any kind. The ordinary kitchen-jack is a compound engine, in which the weight is the power applied to overcome the friction of the parts, and the weight with which the spit is charged; and in which a steady and uniform motion is obtained by means of the fly.——The *smoke-jack* is moved by a fan placed horizontally in the chimney, and, being carried about perpetually by the draught of the fire, requires no winding up.——*Jack*, in ichthyology, a name given to a young pike.——The male of certain animals; as a *jack*-ass.——Also, a nickname or diminutive of *John*.——*Jack* is also used for a horse or wooden frame, to saw timber upon; for a coat of mail, and likewise the garment worn over it; for the small bowl which serves as a mark at the exercise of bowling, &c.——*Jack*, in a ship, an ensign or flag hoisted up at the sprit-sail top-mast head.

JACKAL, in zoology, the *Canis aureus* of Linnæus; a beast of prey, nearly allied to the dog and fox. It rouses other beasts by its cry, so that they are easily taken by the lion, whence it is called the *lion's provider*. Like the vulture and hyæna, he does not require living prey to feed upon; but wherever there is an animal body putrefying, his nose scents it at a great distance, and the air is soon freed from the effluvium. The jackal is a native of Asia and Africa. Buffon gives the following character of this animal: "It unites the impudence of the dog with the cowardice of the wolf, and participating in the nature of each, is an odious creature, composed of all the bad qualities of both."

JACK'DAW, in ornithology, a species of *corvus*, with a black and grey head, and the body, wings, and tail of a glossy black. It is a garrulous, thievish, and mischievous bird.

JACOBIN, a name given, during the revolution in France, to the more violent advocates for republican government. The appellation originated in the circumstance, that the secret meetings of that party were held in a building anciently belonging to the Jacobin monks (an order of Dominicans), where they concerted measures to direct the proceedings of the National Assembly. Hence the word *Jacobin* has been applied to any turbulent demagogue who opposes government in a secret and unlawful manner. The Jacobin club had the following origin: Some short time after the American revolution, political societies were formed in Paris (where *bureaux d'esprit*, or associations for the discussion of literary subjects, had previously been common), in which political subjects were debated, and the members of which were almost universally inclined to republicanism. At first their real object was studiously concealed; but, gathering strength, they displayed their real intentions. Their external symbol was a red cap; afterwards, a dirty dress was the token of their *sansculottism*. The revolution proceeded rapidly; similar societies were formed in nearly all the towns in France; and thus it became enabled to direct the public opinion. In 1792, the leading club, in which sometimes more than 2500 members convened, kept up a correspondence with more than 400 affiliated societies, and the number of Jacobins in all France was estimated at about 400,000. It is not our purpose here, however, to enter into a history of these execrable terrorists, but merely to describe them. Though they split into parties and denounced each other, yet they vied with each other in savage ferocity and a blasphemous contempt for religion; their malign influence accordingly extended far and wide; and there is abundant reason to believe that the seed of Jacobinism continues even yet to produce, not only in the country which first engendered it, but throughout the whole civilized world, that rabid and ruthless spirit which wars against social order, and is continually plotting the destruction of all that is holy, wise, or venerable.

JACOB'S STAFF, a mathematical instrument for taking heights and distances.

JACOBITE, in English history, a partisan or adherent of James II. after he abdicated the throne, and of his descendants; consequently, an opposer of the revolution of 1688, in favour of William and Mary.——*Jacobite*, in church history, the name of two sects of Christians, in Syria and the adjacent countries. They hold that Jesus Christ had but one nature, and they practise circumcision before baptism.

JACOBUS, a gold coin in the reign of James I. of the value of 25*s*.

JACTITATION *of Marriage*, a suit in the ecclesiastical court, when one of the parties declares that he or she is married,





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which if the other party deny, and no adequate proof of the marriage be brought, the offending party is enjoined silence on that head.

JADE, in mineralogy, *sepbrite*, a stone remarkable for its hardness and tenacity; of a colour more or less green, and of a resinous or oily appearance when polished. It is found in detached masses or inhering in rocks, and is fusible into glass or enamel.

JA'GUAR, in zoology, the tiger of the Brazils; about the size of a wolf, brownish yellow, with black spots; very fierce and destructive in the woods of that country. His favourite prey appears to be the larger quadrupeds, such as oxen, horses, sheep, and dogs. When he has made choice of a victim, he springs on its back, and, placing one of his paws on the back of the head, whilst he seises its muzzle with the other, twists its head round with a sudden jerk, thereby dislocating its spine, and thus depriving it of life.

JAL'AP, the root of a West Indian plant (the *convolvulus jalapa*), an herbaceous twining vine, of a black colour on the outside, and reddish within, with resinous veins. It was not known in England until after the discovery of America, and received its name from Xalapa, a town in New Spain. The principal constituent parts of jalap are resin and starch. It is much used in powder as a cathartic, and its taste is exceedingly nauseous.

JAMB, in architecture, the side-piece or post of a door; or the side piece of a fireplace.

JAN'IZARIES, or JAN'ISSARIES, the appellation given to the grand seignior's guard, or the soldiers of the Turkish infantry. They became turbulent, and rising in arms against the sultan, in May, 1826, were attacked, defeated, and subsequently abolished, and their places supplied by troops trained after the European manner.

JAN'SENISTS, a sect of Christians who followed the opinions of Jansenius, bishop of Ypres, in France. These opinions respected grace and predestination, according to the doctrine of Augustine.

JAN'UARY, the first month of the year. Its name was given by the Romans, from *Janus*, the divinity who presided over the new year, and all new undertakings.

JAPAN', in commerce, a mode of varnishing, first learned of the Japanese. The basis of japan-varnishes is composed of seed-lac, resin, and spirit of wine. To this is added the colour required. Figures or flowers, upon the japan, should be executed with coloured varnish; but oil, which cannot be lasting, is frequently substituted. All bodies, the substance of which is firm, may be japanned. Paper is too flexible, unless under the form of "papier maché." The manufacture of japanned goods, as teatrays, candlesticks, snuff-boxes, &c. is carried on to a very great extent at Birmingham; and at Bilston and Wolverhampton it also furnishes employment for many hands.

JAPAN-EARTH, Terra Japonica, or Catechu, a combination of gummy and resinous matter, obtained from the juice of a species of palm-tree.

JARGO'NIA, in mineralogy, a species of earth found in the gem *jargon*. In one hundred parts of jargon, Klaproth has found sixty-eight of this earth, which possesses peculiar properties. It is of a gray or greenish white colour.

JAS'MINE, in botany, a well known beautiful shrub, the *Jasminum officinale* of Linnæus, the flowers of which are highly fragrant, and afford, by distillation, an essential oil, which is much esteemed in Italy to rub paralytic limbs, and in the cure of rheumatic pains. There are thirty known species of this shrub.

JAS'PER, in mineralogy, a genus of stones, of the siliceous class, being a subspecies of rhomboidal quartz. It is of a complex irregular structure, of great variety of colours, and emulating the appearance of the finer marbles, or semipellucid gems. The great characteristic of jaspers is, that they all readily strike fire with steel, and make not the least effervescence with aquafortis.

JAS'PI CA'MEA, in natural history, the dull, broad-zoned, green and white camea; being a very elegant species much resembling the common camea in all things but colour.

JAS'PONYX, in mineralogy, the purest horn-coloured onyx, with beautiful green zones, composed of genuine matter of the finest jaspers.

JATRO'PHA, in botany, a genus of plants, class 21 *Monœcia*, order 8 *Monadelphia*. One species (the *Jatropha Manihot* or *Manioc*) abounds with a milky juice, and every part, when raw, is a fatal poison. It is remarkable that the poisonous quality is destroyed by heat; hence the root is boiled with meat, pepper, &c. into a wholesome soup, and what remains after expressing the juice, is formed into cakes or meal, the principal food of the inhabitants. This plant, which is a native of three quarters of the globe, is one of the most advantageous gifts of Providence, entering into the composition of innumerable preparations of an economical nature. [A farther and more detailed account of this remarkable plant will be found in the article *Manioc*.]

JAUN'DICE, a disease of which the distinguishing peculiarity is, that the whole skin becomes yellow. It proceeds from some affection of the liver and gall-bladder; and is often superinduced by long continuance of melancholy and painful emotions.

JAY, in ornithology, the *Corvus glandarius*; the upper feathers of the wings are blue, variegated with black and white. Jays are lively, petulant, and rapid in their movements; exceedingly noisy; and, like their kindred, the magpie and jackdaw, they can be taught a variety of words and harsh grating sounds.

JEAL'OUSY, that painful state of uneasiness which arises from the fear that a rival may rob us of the affection of one whom we love, or the suspicion that he has already





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done it. In a more extended sense, *jealousy* may be said to be allied to *envy*; for jealousy is awakened by whatever may exalt others, or give them pleasures and advantages which we desire for ourselves. It may also have a more liberal interpretation, as an earnest concern or solicitude for the welfare of others. Such was Paul's godly *jealousy* for the Corinthians.

JEHO'VAH, one of the Scripture names of God, signifying the Being who is self-existent, and gives existence to others. This is the awful and ineffable name of the God of Israel, which was revealed to Moses; denoting Him who is, who was, and who is to come.

JEL'LY, the mucilaginous substance that is obtained, by decoction, from all the soft and white parts of animals, such as the membranes, tendons, ligaments, &c. [See GELATINE.]

JEM'IDAR, in military affairs, a black officer, who has the same rank as a lieutenant in the East India Company's service.

JESS'ED, in heraldry, an epithet for a hawk or falcon having jesses or straps of leather to tie the bells on the legs, which are generally of a different tincture.

JES'UITS, or the SOCIETY OF JESUS, an order in the Romish Church, political and religious, corresponding with a chief at Rome, and possessing great influence in all countries where they are tolerated. This society was instituted by Ignatius Loyola, A.D. 1540. It was a religious body, with a military constitution. Its superior was called its general; and his government was despotic. Unlike other communities of monks, the duties of this were to be performed in active life; its object being universal empire. By every exertion of talent, by every useful work, by every public virtue, and by every private intrigue, it sought to attain an imperious ascendancy over mankind. Its ostensible aim was to rectify every disorder in society; and the means by which this was to be effected, was the possession of unlimited power. Had the jesuits succeeded in their plan, they must have become the scourge of mankind; as it happened, they were checked, by those with whose interests they interfered, while their colossal growth was yet in a state of infancy. No other religious order affords a parallel to this; for, while those who give themselves only to devotion and religious contemplation present few distinguishing traits, the society of Jesus early raised itself to a degree of historical importance unparalleled in its kind. Their privileges and immunities were almost unbounded; and they were exempt from all episcopal and civil jurisdiction and taxes, so that they acknowledged no authority but that of the pope and the superiors of their order. The order was expelled in England in 1604; Venice, 1606; Portugal, 1759; France, 1764; Spain and Sicily, 1767; and abolished, by Clement XIV., 1773. It has since, however, been restored; and, strange to say, that even in this Protestant country (such is the tolerating spirit of the British constitution) they have a college at Stonyhurst, near Preston in Lancashire, with an academy of 500 pupils, and several smaller boarding-schools, from which they carry on, with success, the propagation of the Catholic faith.

JET, in natural history, a solid, dry, opaque, inflammable substance, found in large detached masses, of a fine and regular structure, having a grain like that of wood, splitting more easily horizontally than in any other direction, very light, moderately hard, not fusible, but readily inflammable, and burning a long time with a fine greenish flame. It takes a good polish, attracts light substances, and appears to be electric, like amber; hence it has been called *black amber*. It is frequently used for ornamental purposes, buttons, bracelets, snuff-boxes, &c. Some mineralogists consider it intermediate between coal and bituminous wood.

JET D'EAU *(French)*, in hydraulics, artificial fountains, made by compressed air, and forced, by a syringe, into a vessel formed for the purpose. A jet of any kind being fixed where the syringe was, the fountain, when the cock is turned, will play to a considerable height, according as more or less air is forced into the vessel.

JETTY, a small pier or projection into a river for narrowing it, and raising the water above that place.

JEU D'ESPRIT *(French)*, a witticism, or unexpected association of ideas.

JEWS, the descendants of Abraham, once an independent tribe in Palestine, but dispersed by the Romans; yet still distinguished by their religion, peculiar pursuits, and primitive customs. They are the negotiators of money between all nations, and everywhere distinguished for their successful enterprize and accumulations of wealth. They have, however, lost the distinction of twelve tribes, though perhaps more numerous than at any period. [See JUDAISM.]

JEW'S-HARP, an instrument of music, of a very imperfect character, which, placed between the teeth and by means of a spring struck by the finger, gives a sound which is modulated by the breath. By some it has been called the *jaw's-harp*, because the place where it is played upon is between the jaws.

JEW'S-STONE, the elevated spine of a very large egg-shaped sea-urchin petrified. Its colour is a pale dusky gray, with a tinge of dusky red.

JIB, the foremost sail of a ship, extended from the outer end of the *jib-boom* towards the fore-top-mast-head. In sloops it is on the bowsprit, and extends towards the lower mast-head. Beyond the jib-boom is sometimes extended the *flying jib-boom*.

JIBAY'A, in zoology, an American serpent of the largest kind.

JIG'GER, in a ship, a rope of about five feet long, with a block at one end and a sheave at the other, used to hold on the cable when it is heaved into the ship by the windlass.

JOB, or *the book of Job*, a canonical book



BY THE END OF THE 16TH CENTURY, THE JESUITS HAD OBTAINED THE DIRECTION OF THE EDUCATION OF YOUTH IN EVERY CATHOLIC COUNTRY.

WHOLE TREES CONVERTED INTO PURE JET HAVE BEEN DISCOVERED AT MONTPELLIER, AND THEIR SPECIES CORRECTLY DETERMINED.

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of the Old Testament, containing the narrative of a series of misfortunes which happened to a man named Job, as a trial of his patience and fortitude; together with conferences which he held with his several friends on the subject of his misfortunes, and the manner in which he was restored to happiness. Many of the Jewish Rabbins pretend that this relation is purely a fiction: others think it a simple narrative of a matter of fact; while a third class of critics acknowledge that the ground-work of the story is true, but that it is written in a poetical style, and decorated with peculiar circumstances, to render the narration more profitable and interesting. Such is the opinion of Grotius, who supposed that the events recorded in it happened in Arabia, while the Hebrews wandered in the desert. The whole narrative is characterized by simplicity of manner and intensity of feeling, combined with pure and lofty sentiments, illustrating, in a striking manner, the nature of man and the providence of God.

JOHN (St.) THE EVANGELIST, the author of the Gospel which bears his name, of the book of Revelations, which he wrote while an exile in the isle of Patmos, and of three Epistles. He was emphatically called "the disciple whom Jesus loved;" and he was one of the most pure and estimable characters mentioned in the New Testament.

JOHN THE BAPTIST, the inspired harbinger of the Messiah. His zeal, as one who came to "prepare the way" of a greater and more glorious prophet, was equalled only by his self-denial and humility. He at last fell a victim to his independence and severe virtues, being beheaded by order of Herod Antipas, tetrarch of Galilee, to gratify a vindictive woman. His disciples are said to have been the founders of the sect of *Sabians*.

JOIN'ER, a mechanic who makes and fits together the several pieces of wood which have been prepared for each other. He differs from the carpenter, inasmuch as he does the finer work, that requires more skill.

JOINT, in anatomy, the place where any bone is articulated or joined with another. ——*Joint*, in masonry, the separation between the stones which is filled with mortar.——In joinery, the parts where two pieces of wood join.——In botany, the knot in the stalk of a plant.——Also, a limb that is cut from the carcass of an animal by a butcher.

JOINT STOCK COMPANIES, commercial associations, having a stock or fund formed by the union of several shares from different persons. In such associations the shareholders gain or lose according to the number of shares they hold. In an article generally favourable to "joint-stock companies," in the "Conversations Lexicon" (Glasgow edition), it is remarked, that "whatever their form, and however extensive or limited the liability of their members, these companies are subject to one abuse, which grows out of their very nature and constitution, and cannot therefore be wholly prevented. They are liable to be used by fraudulent or over-sanguine people, *as bubbles*. The fact of their being subject to such perversion, produces a strong and unjust prejudice against them in the minds of many persons. There is no institution or form of association that is free from abuses and perversions. The engines of greatest power act the most destructively when their powers are wrongly directed, or when they are deranged in their action; but this is no ground of argument against making use of them. *It is only a reason for precautions and regulations.*"—(See South-Sea Bubble.)

JOINT-TEN'ANCY, in law, a tenure of estate by unity of interest, title, time, and possession.

JOIN'TURE, in law, a wife's separate estate, secured by will, or by marriage settlement. In other cases the wife inherits one third.

JO'NAH, *prophecy of*, a canonical book of the Old Testament, in which it is related that Jonah, about the year 771 B.C., was ordered to go and prophesy the destruction of the Ninevites, on account of their wickedness. But instead of obeying the divine command, he embarked for Tarshish, when a tempest arising, the mariners drew lots to determine who was the cause of it, and as the lot fell to him he was thrown into the sea, and was swallowed by a great fish, which, after three days, cast him on the shore. After this he boldly preached to the people of Nineveh, and predicted their destruction; but which, on account of their repentance, was averted. Jonah, dreading the suspicion which might attach to him as a false prophet, retired to a mountain at a distance from the city, where he learnt the folly and unreasonableness of his own discontent. It may be observed that some critics consider this book as a collection of traditions, collected after the destruction of Nineveh, while others treat it as a mere allegorical poem.

JON'QUIL, in botany, a plant of the genus *Narcissus*, the flowers of which are either single or double, and are much esteemed for their sweet scent.

JOSH'UA, a canonical book of the Old Testament, containing a history of the wars and transactions of the person whose name it bears. This book is divisible into three parts, the first of which is a history of the conquest of Canaan: the second, which begins with the 13th chapter, is a description of that country, and the division of it among the tribes: and the third, comprised in the last two chapters, contains the renewal of the covenant which he caused the Israelites to make, and the death of their victorious leader.

JOUR'NAL, any book in which is kept an account of what passes in the day.—"It is singular," says Byron, "how soon we lose the impression of what ceases to be constantly before us: a year impairs; a lustre obliterates." We would not, indeed,





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THE POLITICAL DESIGN OF THE JUBILEE WAS TO PREVENT THE TOO GREAT OPPRESSION OF THE POOR, AS WELL AS THEIR PERPETUAL SLAVERY.

recommend persons to keep a record of all the trivial occurrences in which they are engaged, nor to fill a book with sentimental twaddle or common-place conversation; but a brief journal of useful facts, dates, descriptions, &c. may afford both interesting and valuable reminiscences in future years, and will well repay the trouble.——*Journal*, in merchants' accounts, a book wherein every thing is posted out of the waste-book. ——Among publishers and booksellers, a periodical work, either daily, weekly, or monthly, &c. —— In navigation, a book wherein is kept an account of the ship's course, winds, weather, &c.

JU'BILEE, a grand festival celebrated every fiftieth year, by the Jews, in commemoration of their deliverance out of Egypt. At this festival, which was a season of joy, all debts were to be cancelled; all bond-servants were set free; all slaves or captives were released; and all estates which had been sold reverted to the original proprietors or their descendants.——In imitation of the Jewish jubilee, the Romish church instituted a year of jubilee, during which the popes grant plenary indulgences, &c.

JU'DAISM, the religious doctrines and rites of the Jews, a people of Judah, or Judea. These doctrines and rites are detailed in the five books of Moses, hence called *the law*. The *Caraites* acknowledge no other; but the *Rabbinists*, the second of the two sects of Jews, add those inculcated by the *talmud*. The following is a summary of the religious creed of the Jews: 1, that God is the creator and active supporter of all things; 2, that God is ONE, and eternally unchangeable; 3, that God is incorporeal, and cannot have any material properties; 4, that God shall eternally subsist; 5, that God is alone to be worshipped; 6, that whatever has been taught by the prophets is true; 7, that Moses is the head and father of all contemporary doctors, and of all those who lived before and shall live after him; 8, that the law was given by Moses; 9, that the law shall always exist, and never be altered; 10, that God knows all the thoughts and actions of man; 11, that God will reward the observance and punish the breach of his law; 12, that the Messiah is to come, though he tarry a long time; and, 13, that there shall be a resurrection of the dead when God shall think fit. These doctrines, commonly received by the Jews to this day, were drawn up about the end of the eleventh century by the famous Jewish rabbi Maimonides.

JUDGE, an officer who decides causes and prosecutions at law. In the British polity, the title *judge* is retained, where, it should seem, that of *president* would more truly express the functions of the officer who bears it. In chancery, in the ecclesiastical courts, and in the court of admiralty, the judge really *judges;* but in the courts of law, civil and criminal, the *jurors* are the actual judges. There the judge, as he is denominated, performs a very important duty, but he does not *judge*. He maintains the law, he puts the evidence and pleadings in a compendious point of view; but he submits the question of *judgment* to the jury.—In England there are commonly said to be twelve judges, namely, the Lord Chief Justice of the King's Bench; the Lord Chief Justice of the Common Pleas; the Lord Chief Baron of the Exchequer; the three Puisne or inferior Judges of the two first courts; and the Puisne Barons of the latter court. The Chief Justices are installed or placed on the bench by the Lord Chancellor, and the Puisne Judges by the Lord Chancellor and the Chief Justices.

JUDG'ES, THE BOOK OF, a canonical book of the Old Testament, so called from its relating the state of the Israelites under the administration of many illustrious persons who were called judges, from the circumstance of their being both the civil and military governors of the people. The power of the judges extended to affairs of peace and war. They were protectors of the laws, defenders of religion, avengers of all crimes; but they could make no laws, nor impose any new burthens upon the people. They lived without pomp or retinue, unless their own fortunes enabled them to do it; for the revenues of their office consisted in voluntary presents from the people. They continued from the death of Joshua till the beginning of the reign of Saul.

JUDG'MENT, in metaphysics, a faculty of the soul, whereby it compares ideas, and perceives their agreement or disagreement. ——In law, the sentence or doom pronounced in any cause, civil or criminal, by the judge or court by which it is tried. Judgments are either interlocutory, that is, given in the middle of a cause on some intermediate point, or final, so as to put an end to the action.

JU'DICES SELECTI, in Roman antiquities, were persons summoned by the prætor, to give their verdict in criminal matters in the Roman courts, as juries do in ours. No person could be regularly admitted into this number till he was twenty-five years of age. *Sortitia Judicum*, or impanelling the jury, was the office of the *Judex Quæstionis*, and was performed after both parties were come into court, for each had a right to reject or challenge whom they pleased, others being substituted in their room.

JUGULA'RES, in ichthyology, an order of fishes in the Linnæan system, including those that have the ventral fins placed before the pectoral, as the cod, the whiting, the haddock, &c.

JU'GULAR VEINS, in anatomy, veins which run from the head down the sides of the neck, and are divided, from their situation, into external and internal. The *external*, or *superficial jugular vein*, receives the blood from the frontal, angular, temporal, auricular, sublingual, and occipital veins. The *internal*, or *deep-seated jugular vein*, receives the blood from the lateral

NO ENGLISH JUDGE CAN PASS A SENTENCE GREATER THAN THE LAW PRESCRIBES; BUT HE MAY DIMINISH THE EXTREME SEVERITY OF THE LAW.



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THE COMMON JUNIPER SHRUB GROWS WILD IN MANY PARTS OF BRITAIN UPON DRY BARREN COMMONS, BUT THRIVES IN A GOOD SOIL.

sinuses of the dura mater, the laryngeal and pharyngeal veins. Both jugulars unite, and form, with the subclavian vein, the superior vena cava, which terminates in the superior part of the right auricle of the heart.

JU'JUBE, a half-dried fruit of the plum kind; about the size and shape of an olive, the produce of the *Rhamnus zizyphus* of Linnæus. Jujubes, when in perfection, have an agreeable sweet taste, and in the southern parts of Europe, where they are common, they make an article of food in their recent state, and of medicine when half dried.

JU'LIAN PE'RIOD, in chronology, signifies a revolution of 7980 years, which arises from multiplying the solar cycle, the cycle of the moon, and the cycle of indiction into one another. This period is of great use, as the standard and general receptacle of all other epochas, periods, and cycles: into this as into a large ocean, all the streams of time discharge themselves, yet so as not to lose their peculiar characters; and had historians remarked the number of each cycle in each year respectively, there could have been no dispute about the time of any action or event in past ages.—When the Christian era commenced 4713 years of the Julian period were elapsed, 4713 therefore being added to the year of our Lord, will give the year of the Julian period.

JULY, the seventh month of the year. It was the fifth month of the old Roman year, and known by the name of *Quintilis*; but received the name of July in compliment to Julius Cæsar, who reformed the calendar, in such a manner, that this month stood as it does now with us, the seventh in order.

JUN'CUS, in botany, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The species consists of different kinds of rushes, and are mostly perennials.

JUNE, the sixth month of the year, in which is the summer solstice. It was the fourth month of the old Roman year, but the sixth of the year as reformed by Numa and Julius Cæsar. Some suppose it received its name in honour of Junius Brutus. It was looked upon as under the protection of Mercury.

JU'NIPER TREE, the *Juniperus communis*, the berries of which are esteemed as a stomachic, carminative, and diuretic. From this tree has also been obtained a concrete resin, which has been called sandarach or gum juniper. It exudes in white drops, more transparent than mastic. It is almost totally soluble in alcohol, with which it forms a white varnish that dries speedily. Reduced to powder, it is called *pounce*, which prevents ink from sinking into paper where erasures have been made. ——The *Juniperus lycia* is the plant which affords the true frankincense *(olibanum)*. In ancient times it was in great repute as a medicine for affections of the head and breast; but it is now superseded by myrrh, &c. ——*Juniperus sabina*, or Savin, is a powerful and active medicine, particularly in promoting the fluid secretions; but its heating qualities render it hurtful, unless used with the greatest caution.

JU'PITER, in astronomy, the largest of the planets, and the most brilliant excepting the planet Venus. Jupiter revolves about the sun at the distance of 493 millions of miles from that body, and his periodical revolution is estimated at 4330 days, 14 hours, 39 min., 2 sec., or about twelve of our years. His longest diameter is nearly 90,000 miles in length; and the length of his day and night is equal to somewhat less than ten of our hours. It has therefore been calculated that this planet moves in his orbit at the rate of 25,000 miles in an hour, and that his equatorial parts are carried as swiftly as this round the axis, which is 25 times faster than the similar parts of our earth. Jupiter is surrounded with what are called by us his zones or belts, but which have been supposed to be clouds. The axis of Jupiter is so nearly perpendicular to the plane of his orbit that he has little change of seasons. The difference in the length of his polar and equatorial diameters is equal to 6000 miles, the former being to the latter as 12 to 13. This is evidently occasioned by the quick motion round his axis. Jupiter has four satellites revolving about him; these are frequently eclipsed in the shadow of their primary, or hidden behind his body, and the great subserviency of these eclipses to geography and navigation, has occasioned the motions of the satellites to be very carefully observed.

JURISCON'SULT, a master of Roman jurisprudence, who was consulted on the interpretation of the laws.

JURISDICTION, in its most general sense, is the power to make, declare, or apply the law; when confined to the judiciary department, it is what we denominate the *judicial power*, the right of administering justice through the laws. Inferior courts have jurisdiction of debt and trespass, or of smaller offences; the supreme courts have jurisdiction of treason, murder, and other high crimes.

JURISPRU'DENCE, the science which gives a knowledge of the laws, customs, and rights of men in a state or community, necessary for the due administration of justice—a most important and highly useful study.

JU'RY, in law, a certain number of persons, sworn to decide justly on the matter before them. The origin of the trial by jury has been traced back to a very early period in British history, and seems, indeed, in some form, to have been used time out of mind. The constitution of England, in committing the administration of justice to the hands of juries, has subjected them to no restraint that can prevent the free discharge of their duty. They are to decide, not only upon the fact, but upon the criminality of the fact. It is also an established maxim, that a juror, in giving his verdict, is to be governed by nothing but his own opinion. Chief justice Hales has the following passage in his History

THE ROMAN JURISCONSULTS WERE A KIND OF CHAMBER COUNSELLORS, WHO WERE FREQUENTLY CONSULTED, BUT NEVER PLEADED AT THE BAR.



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of the Common Law of England, chap. 12. § 11. "In this recess of the jury, they are to consider their evidence, to weigh the credibility of the witnesses, and the force and efficacy of their testimonies; wherein, as I before said, they are not precisely bound to the rules of the civil law, *viz.* to have two witnesses to prove every fact, unless it be in cases of treason, nor to reject one witness, because he is single; or always to believe two witnesses, if the probability of the fact does upon other circumstances reasonably encounter them; for the trial is not here simply by witnesses, but *by jury*; nay, it may so fall out, that a jury upon their own knowledge may know a thing to be false, that a witness swore to be true, or may know a witness to be incompetent or incredible, though nothing be objected against him—and may give their verdict accordingly." It is a striking and pleasing observation of De Lolme, that "the consequence of the institution of Juries is, that no man in England ever meets the man of whom he can say, 'that man has a power to decide upon my death or life.'" Juries are of several kinds; among these, there are, in the polity of Britain, *grand* and *petty* juries, in criminal cases; and *common* and *special* juries in civil.——The *Grand Jury* consists of a body of men of some consideration in their county, summoned by the sheriff for every session of the peace, every commission of oyer and terminer, and of general gaol delivery, and to whom all indictments are preferred. The summons of a grand juror requires him, in general terms, "to attend, and inquire, present, do, and execute, all those things, which shall be then and there required of him." The grand-jury must consist of twelve persons at least, and not more than twenty-three; that twelve may be a majority. The members are instructed in the articles of their inquiry, by the justice who presides on the bench. They then withdraw, to sit and receive indictments; and they are only to hear evidence on the part of the prosecution: for the finding an indictment is merely in the nature of an inquiry or accusation, which is afterward to be tried and determined; and the grand-jury are only to inquire, whether there be sufficient cause to call upon the party to answer it. Formerly, the grand jury used to indorse their decision upon the indictment, in the Latin tongue, but now, they write upon an indictment which they reject, either the words, "Not a true bill," or "Not found," and upon one, of the truth of which they are satisfied, "A true Bill."—— The *Petit* or *Petty Jury* consists of twelve persons, and no more, for the trial of all criminal offences, and of all issues of fact in civil cases of the common law. The qualifications of petty jurors do not differ, generally, from those required as to grand jurors, their duties being equally important, and requiring equal intelligence. When the cause is called for trial, if all the jurors do not appear, or any of them are justly objected to and set aside, the deficiency may be supplied from among the by-standers, having suitable qualifications, which is called taking jurors *de talibus circumstantibus*, from which circumstance the persons thus selected are called *talesmen*.——*Special Jury*, a panel composed of persons, *especially* fitted by the kind of knowledge they possess, to try some peculiar question. There are also special juries in cases where one of the parties is above the common rank.

JU'BY-MAST, a temporary or occasional mast, used in the place of the foremast or mainmast when it is broken down by a storm.

JUSTICE, in law, the equitable decision of suits and prosecutions. The laws of England have frequently been made the subject of severe animadversion; and it is not to be wondered at, if a system formed of so many broken parts, of ordinances promulgated at so many different periods, adapted to so many different stages of society, and indeed, made up, in great part, of usage and precedents, and, in civil cases, liable to be changed by every new decision, should appear to those, who look for precision and order, confused and faulty: but whatever censure may be passed upon the unwieldy volumes of this code, calumny herself cannot utter a breath against its administration. The law of England may be irregular; but its justice is sacredly correct.——Justice is *distributive* or *commutative*. Distributive justice belongs to magistrates or rulers; and consists in distributing to every man that right or equity which the laws and the principles of that equity require. Commutative justice consists in fair dealing in trade and mutual intercourse between man and man.

JUSTICE OF THE PEACE, a judicial magistrate, or person appointed by the queen's commission to keep the peace of the county in which he resides. Some of these, who are of superior rank or quality, are called *justices of the quorum*, and without the presence or assent of these, or at least one of them, no business of importance can be dispatched. A justice of the peace, though not high in rank, is an officer of great importance, as the first judicial proceedings are had before him in regard to arresting persons accused of grave offences; and his jurisdiction extends to trial and adjudication for small offences.

JUSTI'CIARY, or *Court of Justiciary*, in Scotland, a court of supreme jurisdiction in all criminal cases.

JUSTIFICA'TION, in law, the showing good reason in a court, why one has done the thing for which he is called to answer. *Pleas in justification* must set forth some special matter: thus, on being sued for a trespass, a person may justify it by proving that the land is his own freehold; that he entered a house, in order to apprehend a felon; or by virtue of a warrant, to levy a forfeiture; or, in order to take a distress. ——In theology, *justification* signifies remission of sin and absolution from guilt and punishment, or an act of free grace by

TRIAL BY JURY IS THE DISTINGUISHING PRIVILEGE OF EVERY BRITON; BY IT THE MEANEST SUBJECT IS AS SAFE AS THE HIGHEST.

ALL THE OPERATIONS, EXAMINATIONS, AND OTHER PROCESSES IN A CRIMINAL TRIAL, ARE TO BE PERFORMED IN THE PRESENCE OF A JURY.



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which God pardons the sinner and accepts him as righteous, on account of the atonement of Christ.

JU'RIS U'TRUM, in law, a writ in behalf of a clergyman whose predecessor has alienated the lands belonging to his church.

JUS, (*Latin*) in its general acceptation, signifies that which is right or conformable to law.——*Jus accrescendi*, in law, the right of survivorship between two joint tenants. ——*Jus coronæ*, signifies, in general, the rights of the crown. These are a part of the laws of the kingdom, though they differ in many things from the general laws relating to the subject.——*Jus duplicatum*, is a double right, and is used when a person has the possession of a thing, as well as a right to it.——*Jus divinum*, is that which is ordered by a revelation, in contradistinction to that which is ordered by reason; but it is evident that the distinction exists only in the form, and not in the essence, because that which is ordered by our reason is to be referred to God, as its origin, equally with that which is decreed by revelation.——*Jus gentium*, the law of nations, or the laws established between different kingdoms and states, in relation to each other.——*Jus hereditatis*, the right or law of inheritance.——*Jus patronatus*, in the canon law, is the right of presenting to a benefice; or a kind of commission granted by the bishop to inquire who is the rightful patron of a church.——*Jus possessionis*, is a right of seisin or possession, as *jus proprietatis* is the right of ownership of lands, &c.——*Jus quæsitum*, in antiquity, the fullest enjoyment of Roman citizenship. This is also called *Jus civile* and *Jus urbanum*. ——*Jus imaginis*, the right of using pictures and statues, similar to the modern right of bearing coats of arms, which was allowed to none but those whose ancestors or themselves had borne some curule office.

JUVENA'LIÆ, in Roman antiquity, a feast instituted for youth by Nero, when his beard was first shaven.

# K.

K, the eleventh letter of the alphabet, is usually denominated a guttural, but is more properly a *palatal*, being formed by pressing the root of the tongue against the upper part of the mouth, with a depression of the lower jaw and opening of the teeth. It has the hard sound of *c* before *e* and *i*, where, according to the English analogy, *c* would be soft, as in the words *kept* and *king*: it is seldom at the end of words except in monosyllables, as *clock*, *back*, &c.; being generally omitted where it was formerly used, as in *music*, *public*, &c. It is used between a vowel and the silent *e* final, as *choke*, *broke*, &c. Before *n* the *k* is silent, as in *knife*, *knee*. It is borrowed from the Greek *kappa*, and was but little used among the Latins, perhaps never but in words borrowed from the Greek language. As a numeral K was put for 250, and with a stroke at the top, it stood for 250,000.

KAA'LING, in ornithology, a species of starling, common in China.

KALEI'DOSCOPE, an optical instrument for creating and exhibiting an infinite variety of beautiful figures, by presenting to the eye an ever-varying succession of splendid tints and symmetrical forms. It was invented by Dr. Brewster; and is chiefly used by calico-printers, potters, and carpet-manufacturers, who are thus supplied with an immense variety of patterns. In its most common form, the *Kaleidoscope* consists of a tin tube, containing two reflecting surfaces inclined to each other, at any angle which is an aliquot part of 360°. The eye-glass placed immediately against the end of the mirrors, as well as another glass similarly situated at the other end, are of common transparent glass. The tube is continued a little beyond this second glass, and, at its termination, is closed by a ground glass, which can be put on and off. In the vacant space thus formed, beads, pieces of coloured glass, and other small bright objects are put; and the changes produced in their position by turning the tube, give rise to the different figures.

KA'LI, in botany, *Salsola kali* or glasswort, a genus of marine plants, from which the *alkali* of commerce is procured by burning.

KAL'MIA, in botany, a beautiful North American genus of shrubs, called laurel, ivy-bush, calico-bush, &c., having coriaceous, ever-green, and cup shaped flowers, of a fine rose or purple colour, disposed in large corymbs. It is naturally allied to *rhododendron*. The wood is very hard, susceptible of a fine polish, and resembles box. This shrub is in great request in our gardens, from the beauty of its flowers and foliage.

KAM'SIN, the name given to a hot and dry southerly wind, common in Egypt and the deserts of Africa, which prevails more or less for fifty days. On the approach of this wind the sky becomes dark and heavy, the air gray and thick, and filled with a dust so subtile that it penetrates every where. It is not remarkably hot at first, but increases in heat the longer it continues, during which time it causes a difficulty of breathing, and when at its highest pitch, will sometimes cause suffocation.

KANGAROO', in zoology, a singular ani-

EXAMPLES OF JUSTICE MUST BE MADE, FOR TERROR TO SOME; EXAMPLES OF MERCY, FOR COMFORT TO OTHERS.—BACON.

THE TERM "KALI" IS USED BY GERMAN CHEMISTS TO DENOTE CAUSTIC POTASH; AND "KALIUM," ITS METALLIC BASIS



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PLINY REMARKS, THAT THE SPANIARDS PAID WITH "KERMES" HALF OF THEIR TRIBUTE TO THE ROMANS, WHO PREFERRED THOSE FROM LUSITANIA.

mal peculiar to Australasia. The limbs of the Kangaroo are strangely disproportioned, the fore legs being small and short, whilst the hinder are long and powerful. It is four or five feet long, with a tail three feet; its usual position is standing on its hind feet, its fore feet being employed like those of the squirrel. It lives on vegetables, and, instead of walking, takes leaps of about fifteen feet. It is furnished, like the opossum, with a pouch in the abdomen, which is a receptacle for its young during the time of breeding, and is resorted to after the birth for the sake of warmth and protection. They use their tails and hinder feet as weapons of defence. When they are pursued and overtaken by dogs, they turn, and seizing them with their fore feet, strike them violently with their hinder limbs, thereby often destroying them. The flesh of these animals is said to be nutritious and savoury, somewhat resembling mutton.

KA'OLIN, in mineralogy, a sort of earth which is used as one of the two ingredients in porcelain. Its colour is white, with a shade of gray, yellow, or red.

KAR'PHOLITE, a recently-discovered mineral, of a fibrous structure and a yellow colour.

KECK'LING, among seamen, winding or twining small ropes about a cable or boltrope, to preserve them from galling.

KEDGE, or KEDG'ER, a small anchor, used to keep a ship steady when riding in a harbour or river.——*Kedging*, setting up the sails, and letting a ship drive with the tide when the wind is contrary to the tide.

KEEL, the lowest piece of timber in a ship, running her whole length from the lower part of her stem to the lower part of her stern post, and supporting the whole frame. Sometimes a second keel, or *false keel*, as it is called, is put under the first. A flat-bottomed vessel used on the river Tyne for bringing coals from Newcastle.——In botany, the lower part of a papilionaceous corolla, inclosing the stamens and pistil.——A leaf is said to be *keeled* when it has a longitudinal prominence on the back.

KEEL'-HAULING, among seamen, a punishment of offenders at sea by letting them down from the yard-arm with ropes, and drawing them under the keel from one side to the other.

KEEL'SON, or KEL'SON, in naval architecture, a principal timber in a ship, laid withinside across all the timbers over the keel, and fastened with long bolts; so that it forms the interior or counterpart of the keel.

KEEP, a strong tower in old castles, where the besieged retreated in cases of extremity. It is also called the *donjon* or *dungeon*.

KEEP'ER, in law, an officer of different descriptions, as the *keeper of the great seal*, a lord by his office, and one of the privy council, through whose hands pass all charters, commissions, and grants of the king under the great seal; the *keeper of the privy seal*, through whose hands pass all charters, &c. before they come to the great seal. There is also the *keeper of the forests*, the *keeper of the touch*, an officer of the mint, &c.

KEEP'ING, a term used in various branches of the *fine arts*, to denote the just proportion and relation of the various parts.——In painting, it signifies the peculiar management of colouring and *chiaro oscuro*, so as to produce a proper degree of *relievo* in different objects, according to their relative position and importance. If the lights, shadows, and half tints be not in proper *keeping*, that is, in their exact relative proportion of depths, no rotundity can be effected, and without due opposition of light, shade, and colours, no apparent separation of objects can take place.

KELP, the calcined ashes of a marine plant, sometimes called by the same name, but otherwise known by the denominations of sea-thongs, laces, and glass-wort; and which is a thick-leaved sort of *fucus* or seawrack. *Kali* is a species of this plant. Kelp is thrown on the rocks and shores of Scotland in great abundance; and, in the summer months, is raked together, and dried, as hay, in the sun and wind, and afterwards burnt, Since the duty has been taken off salt, and barilla has come into more general use from the same cause, the manufacture of kelp has greatly declined; but at one time not less than 20,000 tons of this article was annually made in Scotland and the adjacent isles.

KER'MES, in entomology, a species of the insect *coccus*, found in the excrescences of a species of oak-tree.——It is an article extensively used in dyeing, and inferior to nothing but cochineal for dyeing scarlet. *Kermes-grains*, as they are called, are the dried bodies of the female insects of the species *coccus ilicis*, which lives upon the leaves of the *quercus ilex* (prickly oak). In Germany, from the 9th to the 15th century, the rural serfs were bound to deliver annually to the convents, a certain quantity of kermes, (the *coccus polonicus*) among the other products of industry; and at that period this dye-stuff was called *vermiculus* in Latin, and *vermillion* in French. Kermes has been employed from time immemorial in India to dye silk, and was also used by the ancient Greek and Roman dyers; but since the introduction of cochineal, it has become an object of comparatively trifling importance.——*Kermes-mineral*, in pharmacy, a preparation of antimony, so called on account of its red colour, resembling that of the kermes.

KESTREL, in ornithology, a fowl of the genus *Falco*, with yellow legs, a brown back, a spotted breast, and a rounded tail, broad towards the end. It is a very beautiful bird, about the size of a pigeon, and very bold. It builds in hollow oaks, and feeds on quails and other small birds.

KETCH, a vessel with two masts, a main and mizen-mast, usually from 100 to 250 tons burden. Ketches are generally used as yachts, or as bomb-vessels; the latter, which are built remarkably strong, are furnished with all the apparatus necessary for carrying on a vigorous bombardment.

THE DISCONTINUANCE OF THE KELP MANUFACTURE HAS PRODUCED THE UTMOST DESTITUTION AMONG THE PEASANTRY OF THE SCOTTISH ISLES.



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THE TERMS OF THE ORIGINAL CONTRACT BETWEEN THE KING AND THE PEOPLE, ARE NOW COUCHED IN THE CORONATION OATH.

**KETCH'UP**, or **CATS'UP**, a sauce or vegetable gravy, extracted from pickled mushrooms, walnuts, or tomatos, &c. Dr. Kitchener, who in matters of this kind may be supposed to speak like an accomplished connoisseur, says, "Mushroom gravy approaches the flavour of meat gravy more than any other vegetable juice, and is the best substitute for it in meagre soups and *extempore* gravies!"

**KEY**, an instrument for shutting or opening a lock; viz. a bent lever by which the bolt of a lock is turned, with subdivisions according with the wards of the locks.—In music, the name of the fundamental note or toue, to which the whole piece is accommodated, and in which it usually begins and always ends. There are but two species of keys; one of the major, and one of the minor mode, all the keys in which we employ sharps or flats being deduced from the natural keys of C major and A minor, of which they are mere transpositions.—The *keys* of an organ or pianoforte, are movable projecting levers, made of ivory or wood, so placed as conveniently to receive the fingers of the performer, by which the mechanism is set in motion and the sounds produced.

**KEY'STONE**, in architecture, the name for those stones which form the sweep of an arch, but more particularly the last or middle stone placed on the top of the arch or vault.

**KHAN**, an Asiatic governor. In the north of Asia this title expresses the full regal dignity; but there are also *khans* of provinces, cities, &c. "This is the word," says Sir William Jones, "so variously and so erroneously written by Europeans. The sovereign lord of Tartary is neither the *cham*, as our travellers call him, nor the *han*, as Voltaire will have it; but the *khán* or *cán*, with an aspirate on the first letter."

**KID'NAPPING**, the forcible seizing and taking away a man, woman, or child, in order to carry them abroad. This is an offence at common law, and punishable by fine, imprisonment, and pillory.

**KID'NEY-BEAN**, a garden pulse, so named from its resembling a kidney in shape; it has a papilionaceous flower, the pistil of which becomes a long pod, that is eaten before the seeds are fully formed.

**KID'NEYS**, in anatomy, two oblong flattened viscera, or glands, the office of which is to separate the urine from the blood. One of these glands lies on the right, and the other on the left of the back-bone. At the middle of each kidney, where the blood-vessels enter, is a large membranous bag, called the pelvis, which diminishes like a funnel, and forms a long canal, (the ureter) that conveys the urine from the kidney to the bladder. Diseases of the kidneys are generally occasioned by excess of some kind.

**KIL'LAS**, in mineralogy, an argillaceous stone of a pale gray or greenish gray, of a lamellar or coarsely granular texture, found in Cornwall.

**KIL'DEE**, in ornithology, a species of plover, common in America.

**KILN** (pron. *kil*), a large oven, of brick or stone, for the purpose of burning, heating, or hardening any thing.

**KIL'OGRAMME**, or **KIL'OGRAM**, in the new system of French weights and measures, a thousand *grammes*. The kilogram is equal in weight to five drams and a half.

**KILOM'ETER**, in the French system of measures, a thousand meters; nearly equal to a quarter of a French league.

**KING**, in ancient and modern history, the name given to an officer who exercises the supreme functions of political government. Kings are *absolute* monarchs, when they possess the powers of government without control, or the entire sovereignty over a nation; and *limited* monarchs, when their power is restrained by fixed laws; *hereditary*, when they hold the powers of government by right of birth or inheritance; and *elective*, when raised to the throne by choice.—A king of England's power is limited. "He has the prerogative of commanding armies and equipping fleets;—but without the concurrence of his parliament he cannot maintain them. He can bestow places and employments;—but without his parliament he cannot pay the salaries attending on them. He can declare war; but without his parliament it is impossible for him to carry it on. In a word, the royal prerogative, destitute as it is of the power of imposing taxes, is like a vast body which cannot of itself accomplish its motions; or, if you please, it is like a ship completely equipped, but from which the parliament can at pleasure draw off the water and leave it a-ground,—and also set it afloat again by granting subsidies." The law ascribes to a king of England, in his *political* capacity, immortality, for "the king never dies;" and on his decease, which is called his demise, his regal dignity is vested, without any interregnum or interval, at once in his heir.

**KING AT ARMS**, in heraldry, an officer of great antiquity, whose business is to direct the heralds, preside at their chapters, and have the jurisdiction of armoury. In England there are three kings of arms; *Garter*, *Clarenceux*, and *Norroy*; the first is called *principal king at arms*, the two others *provincial kings*; the latter [*north-roy*] officiates north of the Treat. There are also *Lion* king at arms for Scotland, and *Ulster* king at arms for Ireland.

**KING'DOM**, in natural history, a general division of natural objects, as the *animal*, the *mineral*, and the *vegetable kingdoms*, in the Linnæan system.—In Scripture, by *kingdom*, or God's *kingdom*, is meant the government or universal dominion of God.

**KING'FISHER**, in ornithology, the *Alcedo* of Linnæus, a genus of birds, distinguished by a long, straight, sharp bill; strong feet; wings rather short; body thick and compact; head large and elongated; and plumage thick and glossy. The kingfisher frequents the banks of rivers,

DOWN TO THE UNION OF GREAT BRITAIN AND IRELAND, THE KINGS OF BRITAIN ALSO BORE THE TITLE OF KINGS OF FRANCE.



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where it patiently watches till a fish approaches its station, when it dives into the water and brings up its prey, which it soon devours. [See HALCYON.]

KINGS, BOOKS OF, two canonical books of the Old Testament, so called because they contain the history of the kings of Israel and Judah, from the beginning of the reign of Solomon, down to the Babylonish captivity, for the space of near six hundred years.

KING'S BENCH [BANCUS REGIUS], so called because the king used formerly to sit there in person. It is the supreme court of common law in this kingdom, consisting of the Lord Chief Justice, and three puisne or inferior judges, who hear and determine, for the most part, all pleas which concern the crown. The jurisdiction of this court is very extensive. Its justices are sovereign justices of oyer and terminer, of gaol delivery and of eyre; supreme conservators of the peace; and coroners throughout England, some provincial jurisdictions excepted. They have cognizance of all matters of a criminal and public nature, judicially brought before them, to give remedy either by the common law, or by statute; and their power is original and ordinary: that is, after the king has appointed them, they do not derive their jurisdiction from him, but from the law. Whatever crime is against the public good, though it does not injure any particular person, comes within the scope of the justice of this court; and no subject can suffer any kind of unlawful violence or injury to his person, liberty, or possessions, but he may here have a proper remedy: not only by way of satisfaction in damages, but by the exemplary punishment of the offender: for this court is considered as the guardian of the morals of all the subjects of the realm. It is in the discretion of this court to inflict fine and imprisonment, or punishment more severe, on offenders. It may commit to any prison it shall think proper; and the law allows no other court to remove or bail persons it imprisons: but this court may grant a *habeas-corpus* to relieve persons imprisoned by any other authority or means. This court can try all causes capable of coming before a jury, in many of which the king [or queen] is plaintiff; but the *common-pleas*, only those between subject and subject. [Since the accession of queen Victoria, it has been customary to designate this the court of *Queen's Bench*; a practice which has our hearty commendation; and we sincerely hope that no ultra-loyalist will imagine that we are deficient in respect for our gracious sovereign, because we have not happened to place this article under the letter Q.]

KING'S EVIL, in medicine, a scrofulous disease, in which the glands are ulcerated. The gift of curing this disease was formerly attributed to the kings and queens of England, and had its origin in the time of Edward the Confessor. The practice of *touching for the evil* (as it was termed) is now abolished.

KING'S SILVER, in law, money due to the king in the court of common-pleas, for a license there granted to any man for passing a fine.

KI'NO, in medicine, a gum resin obtained from a tree growing on the banks of the river Gambia, in Africa. On wounding its bark, the fluid kino immediately issues drop by drop, and, by the heat of the sun, is formed into hard masses. It is now in common use, and is one of the most efficacious vegetable astringents, or styptics, in the materia medica.

KI'OSK (a Turkish word), a kind of summer-house, or open pavilion, with a tent-shaped roof, and supported by pillars. *Kiosks* have been introduced from Turkey and Persia into European gardens, which they greatly serve to embellish.

KIP'PER, a term applied to a salmon when unfit to be taken, and to the time when they are so considered.

KIRK, in Scotland, a church.——*Kirkman*, one of the church of Scotland.——*Kirk sessions*, an inferior church-judicatory, in Scotland, consisting of the ministers, elders, and deacons of a parish.

KIRSCH'WASSER, a spirituous liquor obtained by fermenting and distilling bruised cherries, called *kirschen* in German.

KIT'-CAT, a term applied to a portrait three-fourths less than a half-length. The word originated with a club in London, to which Addison and Steele belonged; and was so called from one Christopher Cat, a pastrycook, who served the said club with mutton pies!

KITE, a bird of prey, of the falcon kind, remarkable for gliding through the air without often moving its wings. The tail is forked, which distinguishes it from all other British birds of prey.——*Kite*, a plaything for boys, consisting of a slight wooden frame covered with paper, and constructed so as to rise in the air, where by the aid of a long string it may be allowed to fly at the pleasure of the one who holds it.

KNEE'-PAN, in anatomy, the *patella*, a little round bone placed in the fore part of the knee.

KNEES, in naval architecture, pieces of timber bowed like a knee, which bind the beams and side timbers together.——*Knees*, in Russia, nobles of the first class descended from the former ruling families of particular provinces of the Russian empire.

KNIGHT, a title of honour, originally bestowed on every young man of rank or honour, after he was admitted to the privilege of bearing arms. It is now an order of gentlemen next to baronets, or a mere honorary distinction, which entitles the person on whom it is conferred to be styled *Sir*, and his wife *Lady*. A knight is now made by the sovereign touching him with a sword as he kneels, and saying "Rise up, Sir Thomas Phillips;" or whatever may be the name of him who receives the honour of knighthood.—[There certainly has been no man, in modern times, who more truly deserved some especial mark of his sove-



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reign's favour, than the gentleman whose name we have here taken the liberty to introduce; and we make no apology to our readers for so doing; being convinced that we only respond to the feelings of every right-minded Briton in thus offering him our humble and unaffected tribute of gratitude for his heroic conduct, when, as the mayor of Newport, in 1839, he so effectually resisted the misguided Chartists, and thereby prevented scenes of tumult, which, but for his bold and judicious measures, might have convulsed the whole kingdom. "*Palmam qui meruit ferat.*"]

KNIGHT-ER'RANT, or *wandering Knight*, one who, in the generous enthusiasm of chivalry, set out, attended by his esquire or shield-bearer, with the design of exposing his life, wherever wrong was to be redressed. The chivalrous age in which this profession was taken up, demanded such exertions; and though poetry has given an air of fiction to the adventures of knights-errant, they are founded on truth.

KNIGHTHOOD, the state or condition of a knight. This institution has given rise to three others, each of which is only a deviation from itself: thus, 1, The primitive objects of chivalry induced men to enter into intimate associations; whence sprung the several orders of knighthood. From these, by the degeneracy necessarily befalling all establishments, are derived the orders still subsisting in modern Europe. 2, The primitive dignity of chivalry gave birth to that species of knighthood as at present conferred. The two species here mentioned, however, are severally distinguished by historians, as *regular*, and *honorary*; of these, the first comprehend such as still adhere to their constitutions, as in requiring vows of celibacy, &c. and the second, those which are merely titular. The Teutonic order is an example of the former; the order of the Garter of the latter. 3, The union of chivalry with the feudal system, and the decay of both, gave rise to knight-service, and the compulsion of landholders to become knights. [See CHIVALRY.]

KNIGHT-MAR'SHAL, an officer in the royal household of Great Britain and Ireland, who has jurisdiction and cognizance of offences committed within the household and verge, and of all contracts made therein, a member of the household being one of the parties.

KNIGHT OF THE SHIRE, a member of parliament representing a *shire*, in contradistinction to a burgess, who represents a borough. A knight of the shire is so called, because, as the *terms* of the writ for election still require, it was formerly necessary that he should be a knight. This restriction was coeval with the tenure of knight-service, when every man who received a knight's fee immediately of the crown was constrained to be a knight; but at present any person may be chosen to fill this office who has a freehold estate in land worth £600 per annum.

KNIGHT-SERVICE, a tenure of lands, instituted on the decline of the feudal spirit, with the view of reviving political vigour. It originally consisted in investiture of lands, upon express condition that the person so invested should serve in the wars of his lord. This duty was subsequently compounded for, by the payment of sums of money on various occasions; and, at length by statute 12 Car. II. the whole was abolished.

KNOT, in seaman's language, a division of the log-line which answers to half a minute, as a mile does to an hour, or it is the hundred-and-twentieth part of a mile. Hence, when a ship goes eight miles an hour, she is said to go eight *knots*.——*Knot*, in ornithology, a fen bird, the flesh of which is very delicious.

KNOUT, a mode of punishment in Russia, which at one time was exercised with the greatest possible barbarity, but which is now less cruel, though it at present consists of a severe scourging on the back with a leather strap, in the point of which wire is interwoven. Formerly, in addition to this, the nose was slit up, and the ears were cut off.

KNOWL'EDGE, that information which the mind receives, either by its own experience, or by the testimony of others. The beneficial use of *knowledge* is *wisdom*. That portion of *knowledge*, the truth of which can be demonstrated, is *science*.

KO'BA, in zoology, a species of antelope, with horns close at the base.

KO'BOB, in zoology, a venomous serpent of America.

KOL'LYRITE, in mineralogy, a variety of clay, the colour of which is either pure white, or slightly shaded with gray or yellow.

KON'TILITE, in mineralogy, a siliceous earth, in the form of a loose powder, and remarkably fusible.

KORAN. [See ALCORAN.]

KO'RIN, in zoology, an antelope with slender smooth horns.

KOU'MISS, or KU'MISS, an intoxicating liquor made by the Calmuc Tartars, by fermenting and distilling mare's milk.

KOUPH'OLITE, in mineralogy, a variety of *phrenite*, of a greenish white colour, translucent, glistening, and pearly. It is found in the Pyrenees.

KRA'KEN, an immense sea-monster, said to be seen occasionally on the coasts of Norway; but the accounts of it are so marvellous, that, rather than incur the charge of gross credulity ourselves, or an attempt to impose on the credulity of others, we shall merely copy a few lines from Pontoppidan, bishop of Bergen, who has described it at great length. "Its back or upper part," says he, "which seems to be in appearance about an English mile and a half in circumference, looks at first like a number of small islands, surrounded with something that floats and fluctuates like sea-weed. Here and there a large rising is observed, like sand-banks, on which various kinds of small fishes are seen continually leaping about, till they roll off into the water from the sides of it. At last, se-





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veral bright points or horns appear, which grow thicker and thicker the higher they rise above the surface of the water; and sometimes they stand up as high and large as the masts of middle-sized vessels. It seems these are the creature's arms; and it is said, if they were to lay hold of the largest man of-war, they would pull it down to the bottom. After this monster has been on the surface of the water a short time, it begins slowly to sink again; and then the danger is as great as before, because the motion of his sinking causes such a swell in the sea, and such an eddy or whirlpool, that it draws every thing down with it." No one can read this account without being forcibly reminded of the wonderful stories we have heard of late years respecting the sea-serpents seen on the North-American coasts. And whatever may be the animal which has given rise to these stories, the *kraken* described by Pontoppidan can hardly be supposed to be a real existence. It has been supposed, and not without a show of great probability, that the account grew out of the appearance of rocks only visible at certain seasons, or of floating islands, &c. Yet that monsters of prodigious dimensions, dissimilar from any known species, have been met with in almost every quarter of the world, is certain; and every authenticated account of such, at least claims the attention of the naturalist.

KRE'OSOTE, in chemistry, the anti-putrescent principle of pyroligneous acid, is an oily, colourless, transparent liquid, possessing great refrangibility. Its odour is penetrating, disagreeable, and similar to that of smoked beef. This substance forms numerous interesting compounds with acids and alkalies; but of all the organic acids, the acetic seems to have the greatest affinity for kreosote, uniting with it in every proportion.

KU'FIC, the ancient letters of the Arabic, so called from Kufa, on the Euphrates.

KY'ANITE, a mineral found both massive and in regular crystals: its prevailing colour is blue, but it occurs also in various shades of gray, green, and bluish white. It is infusible by the common blowpipe.

# L.

L, the twelfth letter of the English alphabet. It is a vowel, formed in the voice by intercepting the breath between the tip of the tongue and the fore-part of the palate, with the mouth open. There is something of aspiration in its sound, and therefore our British ancestors usually doubled it, or added an *h* to it; as in *llan*, or *lhan*, a temple. In English words of one syllable it is doubled at the end, as in *all*, *wall*, *mill*, *well*, &c., but not after diphthongs and digraphs, as *foul*, *fool*, *prowl*, *growl*, *foal*, &c.; words of more syllables than one, as *foretel*, *proportional*, &c., are written with a single *l*. In some words *l* is mute, as in *half*, *calf*, *talk*, *chalk*. It may be placed after most of the consonants, as in *blue*, *clear*, *flame*, &c., but before none of them. As a numeral letter, L denotes 50; and with a dash over it, 50,000.

LA, in music, the syllable by which Guido denotes the last sound of each hexachord: if it begins in C, it answers to our A; if in G, to E; and if in F, to D.

LAB'ADISTS, a sect who lived in the 17th century, the followers of Jean de Labadie, who held that God can and does deceive men, that the observance of the Sabbath is not required, and other heretical opinions.

LA'BARUM, in Roman antiquity, the standard borne before the emperors; being a rich purple streamer, supported by a spear. It was the name given to the imperial standard, upon which Constantine, after his conversion, blasoned the monogram of Christ.

LAB'DANUM, or LAD'ANUM, a resin of the softer kind, though of too firm a consistence to be ranked among the fluid ones. It exudes from the leaves of the *Cistus ladanifera*, a shrub which grows in Arabia, Candia, and other parts of the Archipelago. It is used in medicine, chiefly in external applications.

LA'BEL, in heraldry, a fillet usually placed in the middle along the chief of the coat without touching its extremities. It is adorned with pendants; and when there are above three of these, the number must be specified in blazoning. This is an addition to the arms of a second brother, and is esteemed the most honourable of all differences.

LA'BIA, in anatomy, the lips, the red part of which is called *Prolabium*; the sphincter, *Orbicularis Labiorum*; and the cutiole, *Epithelium*.

LA'BIALS, in grammar, an epithet for those letters which are pronounced chiefly by means of the lips.——In anatomy, an epithet for the arteries and glands which belong to the lips.

LA'BIATE, or LA'BIATED, in botany, an epithet for monopetalous flowers, consisting of a narrow tube, with a wide mouth, divided into two or more lips.

LAB'ORATORY, a workshop or building properly fitted up with apparatus necessary for the various operations, processes, and experiments, that may be required by the practical chemist.——*Laboratory*, in military affairs, signifies a place where all sorts



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AS AN ABBREVIATION, LL.D. STANDS FOR "DOCTOR OF LAWS;" LS. IN COPIES OF DEEDS, CHARTERS, &c. FOR "LOCUS SIGILLI," THE PLACE OF THE SEAL.

"LABARUM" WAS THE NAME GIVEN TO THE IMPERIAL BANNER, UPON WHICH CONSTANTINE, AFTER HIS CONVERSION, BLAZONED THE MONOGRAM OF CHRIST.

of fire-works are prepared, both for actual service and experiments.——The word is also used to denote any place wherein a series of operations are performed; hence the stomach is called the grand *laboratory* of the human body.

LA'BOUR, bodily exertion in occupations by which subsistence is obtained, as in agriculture, manufactures, &c. The word is also applied to that degree of intellectual exertion or application of the mind which occasions weariness. In the former sense, however, its use is most legitimate.—It is somewhat curious to mark the progressive advance in the prices of labour during the last 500 years, with the prices of provisions; and satisfactory at the same time to know, that the wages of the labourer and artisan, of every description, have risen in a much greater proportion than wheat, by the price of which their wages were originally regulated. In the year 1352, 25 Edw. III. wheat was 1*s.* 10*d.* per bushel. The following are the rates of wages at that time, as established by law: Haymakers 1*d.* per day. A mower of meadows 5*d.* per day, or 6*d.* an acre. Reapers of corn, in the first week of August, 2*d.*, in the second, 3*d.* per day, and so till the end of August, without meat, drink, or other allowance, finding their own tools. For threshing a quarter of wheat or rye, 2¼*d.*; a quarter of barley, beans, peas, and oats, 1½*d.* A master carpenter, 3*d.* a day; other carpenters, 2*d.* a day. A master mason, 4*d.* per day; other masons, 3*d.* per day, and their servants 1½*d.* per day. Nearly a century after, *i. e.* in 1456, 23 Henry VI., the wages were—For a bailiff of husbandry, 23*s.* 4*d.*, per annum, and clothing of the price of 6*s.*, with meat and drink; chief hind, carter, or shepherd, 20*s.*, clothing 4*s.*; boy under 14 years, 6*s.*, clothing, 3*s.* Free mason, or master carpenter, 4*d.* per day; without meat or drink, 5½*d.* Master tiler or slater, mason or mean carpenter, and other artificers concerned in building, 3*d.* per day; without meat and drink, 4½*d.*; every other labourer 2*d.* a day; without meat and drink 3½*d.*, after Michaelmas to abate in proportion. In time of harvest, a mower 4*d.* a day, without meat and drink 6*d.*; reaper or carter, 3*d.* a day, without meat and drink 5*d.*; woman labourer, and other labourers, 2*d.* a day, without meat and drink 4½*d.* per day.—— In the late "Factory Commission Report," the comparative prices of labour in different countries of Europe are thus stated:— The factory operative in England works 69 hours per week, for which, on an average, he has 11*s.* wages; in America, he works 78 hours, and has 10*s.*; in France he works from 72 to 84 hours, and has 5*s* 8*d.*; in Switzerland he works from 78 to 84 hours, and has 4*s.* 5*d.*; in the Tyrol he works from 72 to 80 hours, and has 4*s.*; in Saxony he works 72 hours, and has 3*s.* 6*d.*; in Bonn, in Prussia, he works 94 hours, and has 2*s.* 6*d.*

LAB'YRINTH, a maze, or place full of intricate windings, which renders it difficult to find the way from the interior to the entrance. The labyrinth of Egypt, built by Psammeticus on the banks of the river Nile, contained, within the compass of one continued wall, one thousand houses and twelve royal palaces, all covered with marble; it had only one entrance, but innumerable turnings and windings, so that those who were in could not find their way out without a guide. There were also many other celebrated labyrinths in antiquity; such as those of Crete, Clusium, &c.——*Labyrinth*, in anatomy, that part of the internal ear behind the cavity of the tympanum.

LAC, LACK, or GUM-LAC, a concrete brittle substance (not a *gum*, though so called, but a *resin*). It is deposited on different kinds of trees in the East-Indies, by a species of insects of the cochineal kind. Some of the dead insects remaining in their cells give the whole a red colour. That sort of lac which is called *stick-lac*, is the wax adhering to small sticks or branches, and which is unprepared. This lac, when separated from the sticks, grossly powdered, and deprived of its colour, for the sake of the dyes, and other purposes, is called *seed-lac*. When the stick-lac is freed from its impurities by melting it over a gentle fire, and formed into cakes, it is called *shell-lac*. United with ivory-black, or vermilion, it forms black and red *sealing wax*. A solution with borax, coloured by lamp-black, constitutes *Indian ink*. Lac, dissolved in alcohol or other menstrua, by different methods of preparation, forms various kinds of *varnishes* and *lackers*. In the East it is much used for trinkets.

LAC'CIC, pertaining to lac, or produced from it; as, *laccid* acid.

LACE, a delicate kind of net-work, used as an ornament of dress, made of gilt and silver thread, silk, cotton, or of flax. The most celebrated and costly is made at Brussels. Much used to be made in Buckinghamshire, called pillow or bobbin lace, from being woven upon a pillow or cushion by means of bobbins; but the machine lace of England is now equal to any, and much cheaper. In speaking of the modern machine-made bobbin-net lace, Dr. Ure says, "this elegant texture possesses all the strength and regularity of the old Buckingham lace, and is far superior in these respects to the point net and warp lace, which had preceded, and in some measure paved the way for it. Bobbin-net may be said to surpass every other branch of human industry in the complex ingenuity of its machinery; one of Fisher's spotting frames being as much beyond the most curious chronometer in multiplicity of mechanical device, as that is beyond a common roasting-jack." A *rack* of lace, is a certain length of work counted perpendicularly, and contains 240 meshes or holes; and such has been the progress of improvement and economy in this manufacture, that the cost of labour in making a *rack*, which was, twenty years ago, 3*s.* 6*d.*, is now not more than one penny!——*Lace made by Caterpillars*. This most extraordinary and ingenious species of manufacture has been contrived by an officer of engineers residing in the city of



LAC YIELDS A FINE RED DYE, WHICH, THOUGH NOT SO BRIGHT AS THE TRUE MEXICAN COCHINEAL, IS SAID TO BE MORE PERMANENT.

LACE IS "BASED" WITHOUT INJURING THE FABRIC, THE FLAME OF THE GAS PENETRATING THE MESHES, AND DESTROYING THE LOOSE FIBRES.

Munich. It consists of lace and veils, with open patterns in them, made entirely by caterpillars. The following is the mode of proceeding adopted:—Having made a paste of the leaves of the plant, on which the species of caterpillar he employs feeds, he spreads it thinly over a stone, or other flat substance, of the required size. He then, with a camel-hair pencil dipped in olive oil, draws the pattern he wishes the insects to leave open. This stone is then placed in an inclined position; and a considerable number of the caterpillars are placed at the bottom. A peculiar species is chosen, which spins a strong web, and the animals commence at the bottom, eating and spinning their way to the top, carefully avoiding every part touched by the oil, but devouring every other part of the paste. The extreme lightness of these veils, combined with some strength, is truly surprising. One of them measuring twenty-six and a half inches by seventeen inches, weighed only 1.51 grains—a degree of lightness which will appear more strongly by contrast with other fabrics. One square yard of the substance of which these veils are made, weighs four grains and one-third; whilst one square yard of silk gauze weighs one hundred and thirty-seven grains, and one square yard of the finest patent net weighs two hundred and sixty-two grains and a half.

LACERTA, in zoology, the lizard tribe, an extensive genus of *amphibia*, but far more numerous in former states of the earth than at the present.

LACH'RYMAL, an appellation given to several parts of the eye, from their serving to secrete or convey away the tears, as the *lachrymal ducts*, the *lachrymal gland*.

LACHRYM'ATORY, in antiquity, a vessel in which were collected the tears of a deceased person's friends, and preserved along with the ashes and urn. It was a small glass bottle or phial, many of which have been found in the tombs and sepulchres of the ancients.

LA'CING, among mariners, the rope or line used to confine the heads of sails to their yards.

LACIN'IATED, in botany, an epithet denoting a leaf which has several sinuses down to the middle, and the lobes which separate these indented or jagged.

LACK, in commerce, the number of 100,000 rupees in India; about 12,500*l.* sterling.

LAC'QUER, or LACK'ER, a sort of varnish applied to tin, brass, or other metals. The basis of lacquer is a solution of the resinous substance of seed-lac, or *shell-lac*, in spirits of wine. In order to give a golden colour to the solution, two parts of gamboge are added to one of anuotto. When silver leaf or tin is to be lacquered, a larger quantity of the colouring materials is requisite than when the lacquer is intended to be laid on brass.

LACTE'A FE'BRIS, in medicine, the milk fever.

LAC'TEALS, or LAC'TEAL VESSELS, in anatomy, tender transparent vessels, possessed of an infinite number of valves, which convey the chyle from the mesentery to the thoracic duct.

LACTIC A'CID, in chemistry, an acid procured from sour milk by precipitating it with lime water and separating the lime with oxalic acid. It is supposed to consist of acetic acid and muriate of potash, with a small portion of iron and an animal matter. Lactic acid may be detected in all the fluids of the animal body, either free or saturated with alkaline matter.

LACTIF'EROUS, in botany, an appellation given to plants abounding with a milky juice, as the sow-thistle, and the like.

LACTU'CA, in botany, the name of a genus of plants, class *Syngenesia*, order *Polygamia æqualis*. The *Lactuca sativa*, or common lettuce, a cooling salad herb, possessed of narcotic properties, but affording no nutriment. Lettuce formed the opium of Galen in his old age; a proof that, in the warmer climates, it must have a higher degree of narcotic power than it acquires in this country.—*Lactuca virosa*, or strong-scented lettuce, is a common plant in our hedges and ditches, which has a strong ungrateful smell, resembling that of opium, and a bitterish acrid taste. It abounds with a milky juice, resembling that of the white poppy.

LA'DING, a term applied to the goods in a ship, whose quantity is limited by her own tonnage, when the specific gravity of the goods is greater than water.

LA'DY. This word originally appertained only as a title to the daughters of earls; but now, by custom, it belongs to any woman of genteel manners and education.

LA'DY-BIRD, or LA'DY-COW, in entomology, a small red sheath-winged insect, of the genus *Coccinella*. They deposit their eggs on the leaves of trees, and the larvæ produced are great devourers of the aphides or plant-lice.

LA'DY-DAY, the 25th of March, so called because it is the day of the Annunciation of the Virgin Mary.

LADY'S-SLIP'PER, in botany, a plant of the genus *Cypripedium*, conspicuous for its large inflated flowers. They are chiefly found in the mountainous parts of Europe and in North America.

LAGOON', a name given to those creeks, or shallow lakes, which extend along the coast, and which contain numerous small islands: Venice, for instance, is built on sixty of them. Towards the sea the inlets are secured by dams, natural or artificial.

LAGOPHTHAL'MIA, in medicine, a disease in which the eye cannot be shut. It may arise from various causes, but the most frequent is a cicatrix, after a wound, ulcer, or burn.

LAIR, among sportsmen, the place where the deer harbour by day. This term is also used to signify a place where cattle usually rest under shelter; also the bed or couch of a wild beast.

LAIRD, a title of honour in the Highlands, equivalent to that of *Lord*.



IT IS GENERALLY BELIEVED THAT THE LACE MANUFACTURE WAS INTRODUCED INTO ENGLAND BY SOME REFUGEES FROM FLANDERS.

LACTIC ACID HAS NOT HITHERTO BEEN APPLIED TO ANY USE IN THE ARTS, EXCEPT BY THE DUTCH, IN BLEACHING THEIR LINEN WITH SOUR MILK.

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CARMINE, THE FINE RED LAKE COLOUR, IS PREPARED BY PRECIPITATION FROM A DECOCTION OF COCHINEAL, WITH OTHER INGREDIENTS.

ALLOTMENTS OF LAND LET AT FAIR RENTS TO THE POOR, PROMOTE INDUSTRY AND SOBRIETY, AND ARE THE MEANS OF INCREASING SUBSISTENCE.

**LAKE**, a large collection of inland water, having no direct communication with the ocean. Lakes may be divided into four kinds: 1, such as neither receive nor send forth rivers; 2, such as emit rivers, without receiving any; 3, such as receive rivers, without emitting any; and 4, such as both receive and send forth rivers. The largest on the old continent is the Caspian, 700 miles long, and 200 broad, often called a *sea;* and in North America, a series of magnificent lakes run into each other, the largest of which, Lake Superior, is 540 miles long, and 150 broad. All the great American lakes are of fresh water.——*Lake*, in painting, a fine red colour, between carmine and vermilion. It is formed by precipitation from the solution of the colouring matter with an earth or metallic oxyde.

LA'MA, a pretended delegate of heaven, or pontiff of Tartary and Thibet. He is worshipped as a supernatural being by his subjects, and is never to be seen but in the secret recesses of his palace, where he sits cross-legged on a cushion. The people believe that the supreme divinity lives in him, that he knows and sees every thing in the deepest recesses of the heart, and that he never dies, but on the dissolution of his mortal frame his soul enters into the body of a new-born child. The worship of his followers consists in clamorous songs and prayers, in splendid processions, in the solemnization of certain festivals, and in personal austerities.

LAM'BDOICISM, a fault in speaking, where too much stress is laid on the pronunciation of the letter *l*.

LAMBDOI'DAL, in anatomy, an epithet for a suture of the occiput.

LAME'LLÆ, in conchology, the little plates of which the shells of crustaceous fish are composed.

LAMENTA'TIONS, a canonical book of the Old Testament, written by the prophet Jeremiah. The first four chapters of the Lamentations are an *abecedary*, every verse or couplet beginning with one of the letters of the Hebrew alphabet, in the alphabetical order.

LAM'INA, a layer or coat lying over another; applied to the plates of minerals, bones, &c.——In botany, the broad or spreading part of the petal, in a polypetalous corolla.——In mineralogy, a plate or thin piece of metal.——In anatomy, *lamina* are the two plates or tables of the skull.

LAM'INABLE, an epithet for a metal which may be extended by passing between steel or hardened cast-iron rollers.

LAM'MAS-DAY, a festival celebrated on the first of August by the Romish church, in memory of St. Peter's imprisonment.

LAMP'AS, or LAM'PERS, a disease in the palate of a horse's mouth.

LAMP'BLACK, a colour procured from the soot of a lamp; or rather, a fine soot formed by the condensation of the smoke of burning pitch, or some resinous substance, in a chimney terminating in a cone of cloth.

LAM'PIATE, in chemistry, a compound salt, composed of lampic acid and a base. The *lampic acid* is obtained by the combustion of ether by means of a lamp.

LAM'PREY, a genus of anguilliform fishes, which adhere firmly to rocks and other bodies by the mouth. They are esteemed as a delicacy, and are in season in the months of March, April, and May. They resemble the eel, both in their form and winding movements.

LAMPY'RIS, a genus, containing 60 species of fire-flies. [See FIRE-FLY, GLOW-WORM, &c.] One of this genus (called the Skipper, from the singular dexterity with which, when lying on its back, it throws itself into the air, and falls on its feet), emits its light from two transparent tubercles attached to its thorax, besides which there are two luminous spots beneath the elytra, only visible, of course, when it is on wing, and they are elevated: it then appears studded with four rich and vivid gems of a golden, blue lustre. In fact, the whole body seems a flood of pure light. In the West Indies (says Mr. John Murray, in his entomological remarks), the natives employ these living fires to give light in managing their household concerns. In travelling, they are wont to attach one to each toe; and it is stated that in fishing and hunting they require no other illumination.

LA'NATE, in botany, covered with a substance like curled hairs; as a *lanated* leaf or stem.

LAN'CEOLATE, in botany, oblong and gradually tapering towards each extremity; as, a *lanceolate* leaf.

LA'NCERS, in military affairs, a body of men (originally in Poland, but now common in other countries also) armed with long lances, and mounted on swift horses.

LA'NCET, a two-edged surgical instrument, used in bleeding, opening tumours, &c.

**LAND**, in geography, one main division of the earth—the solid matter which constitutes the fixed part of the surface of the globe, as distinguished from water. Hence we say, the earth is *terraqueous*, consisting of land and water.——*Land*, in seaman's language, makes part of several compound terms: thus, *to make the land*, is to discover land from sea, as the ship approaches it. *Land-locked*, is when land lies all round the ship, so that no point is open to the sea: if it anchor in such a place, she is said to ride land-locked, and is considered safe from wind and tide. A *land-mark*, is any mountain, rock, steeple, tree, &c. that may serve to make the land known at sea, and thereby direct ships passing by how to steer, so as to avoid rocks, shoals, whirlpools, &c. The *land is shut in*, a term used to signify that another point of land hinders the sight of that the ship came from. The ship lies *land to*, that is, she is so far from shore that it can only be just discerned. *Land-turn*, is a wind that in almost all hot countries blows at certain times, from the shore in the night. *To set the land*, is to see by the compass how it bears from the ship. *Land-breeze*, a current of air which, in many parts



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EVERY HUMAN INVENTION HAS ITS NIGHT OF OBLIVION; EVEN A WRITTEN LANGUAGE BECOMES UNINTELLIGIBLE DURING THE LAPSE OF AGES.

within the tropics, particularly in the West Indies, regularly sets from the land towards the sea during the night, and this even on opposite points of the coast.

LANDAU', a coach which parts at the top, so as to form an open carriage.

LAND'GRAVE, in Germany, the title of certain princes who possess estates or territories called *landgraviates*. It was formerly an officer who had jurisdiction over such a tract of country or province.

LAND'ING, in architecture, the first part of a floor at the head of a flight of stairs.

LAND REMAINS, a term applied to remains of animals and vegetables, found everywhere on digging in the earth, mostly interchanged with strata of marine remains.

LAND'SCAPE, in painting, a particular extent of land, with all the objects it contains and its various scenery.

LAND'SLIP, the sliding down of a considerable tract of land from a mountain.

LAND-WAITER, an officer of the Custom-house, whose duty it is upon landing any merchandise, to examine and take an account of the various articles.

LAN'GREL SHOT, or LAN'GRAGE, a particular kind of shot used at sea for disabling the sails and rigging of an enemy's ship. It consists of bolts, nails, and other pieces of iron fastened together.

LAN'GUAGE, an assemblage of articulate sounds forming words and signs for the expression of the thoughts of the mind; a faculty by which the all-wise Creator has distinguished man from the inferior animals. That there was a primitive language, which was spoken by our first parents, is a fact derived from Holy Writ; but what that language was, is involved in the deepest obscurity. Man was created a social animal; it was therefore necessary that men should be able to communicate to each other their plans, projects, and ideas. By means of their mental faculties and physical organs, they soon found words by which to make known their perceptions of natural and moral objects; and they also found means to retain them in their memory by some method or order of classification. Whatever theories may be started, we really know no more than this: let us then be content with what we know, nor uselessly spend our time in seeking to discover that which is hidden under an impenetrable veil. When we speak of *written language*, as distinguished from *oral*, it is understood, that certain marks or characters are, by tacit agreement, considered the representatives of audible sounds; in short, that these visible signs are made to awaken in the mind the idea of certain sounds, which sounds, by another tacit agreement, awaken the ideas of physical objects or moral perceptions. Thus the eye operates on the mind through the medium of the ear; but the process is so rapid, that it is not perceived at the time; and writing may therefore be said even to be a quicker mode of communication than speech, for the eye can run over, and the mind comprehend, the sense of a page of a printed book, in a much shorter space of time than the words which it contains can be articulated. But speech is the basis of all other modes of communication between men; and all of them, whatever be their forms, reach the mind only through the recollection of ideas, as clothed in the words of a spoken language.

LAN'GUED, in heraldry, an epithet for the tongue of an animal, represented in coat armour of a different tincture from the body.

LAN'IARD, a short piece of rope or line, fastened to several machines in a ship, and serving to secure them in a particular place, or to manage them more conveniently; but more especially those used to extend the shrouds and stays of the masts.

LANI'GEROUS, an appellation given to whatever bears wool. Lanigerous trees are such as bear a woolly or downy substance, as in the catkins of the willows, &c.

LA'NIUS, in ornithology, a genus of birds, order *Accipitres*, having a straight bill, with a tooth on each mandible at the end, and a tongue jagged at each end. The principal species are the Great Shrike *(lanius excubitor)*, and the Butcher-bird *(lanius collurio)*.

LAN'TERN, or LANT'HORN, a case or vessel to carry a candle in; being a kind of cover usually made of white iron, with sashes of some transparent matter, as glass, horn, &c. to transmit the light.——*Dark Lantern*, one with only a single opening, which may also be closed up when the light is to be entirely hid; or opened, when there is occasion for the assistance of the light to discover some object.——*New Ships' Signal Lantern*. A most admirable invention has lately been brought into use, and is likely (says the Hull Packet) to meet with general adoption, intended to prevent those accidents which are the cause of so much loss of property, as well as the annual sacrifice of a number of valuable lives. It consists of a ship's lantern, of copper, strongly and efficiently constructed, and possessing the means of being regulated so as to show a light of different colour, according to the tack upon which the vessel bearing it may be sailing, or the position in which she lies. A set of instructions accompanies each lantern, by which the master is informed what light he is to show on each change of tack and position, and thus a mutual understanding is attained amongst navigators as to the meaning of the signals exhibited. The change of colours is effected by the following simple contrivance:—The lantern contains an interior case, capable of being turned round, and having windows of glass of several colours. The lamp of the lantern has a strong reflector and powerful bull's eye, or magnifier, to project the light, opposite which, in the outer case, is an aperture. By turning round the interior case, each coloured glass window is brought in front of the bull's eye, and thus a light of the colour required is projected.——*Lantern*, in architecture, a little dome raised over the roof of a building to give light, and to serve as a crowning to the fabric.

THE WORDS AND SENTENCES OF LANGUAGE ARE LIKE NOTES IN MUSIC, OF ALL LENGTHS; AND THUS, INDEED, IS THE ANALOGY OF LANGUAGE AND MUSIC CARRIED THROUGH.



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ORIENTAL RUBIES, SAPPHIRES, AND TOPAZES, ARE CUT WITH DIAMOND POWDER SOAKED WITH OLIVE OIL, ON A COPPER WHEEL.

LAN'TERN-FLY, a beautiful insect of South America, of the genus *Fulgora*, emitting a strong phosphoric light from its head or lantern, and almost literally filling the air in an evening.

LAOC'OON, a celebrated monument of Greek sculpture executed in marble by Polydorus, Athenodorus, and Agesander, the three most celebrated artists at Rhodes. This fine remain of antiquity was found at Rome in the palace of Titus, in the beginning of the 16th century, and has since been deposited in the Farnese palace. Laocoon, who was a priest of Neptune, is represented, with his two sons, enveloped in the folds of two monstrous serpents; and the whole displays the most thorough knowledge of anatomy, of character, and of ideal perfection. Casts of this beautiful group are to be met with at any of the statuary shops.

LAP'IDARY, one who polishes and engraves stones. This is effected by means of friction produced by wheels of various metal, according to the nature of the stone to be worked. Thus diamonds require wheels of soft steel; rubies, sapphires, and topazes, copper wheels; emeralds, amethysts, &c. leaden wheels—worked with oil and various powders.——The term *lapidary* is also used for a virtuoso skilled in the nature, kinds, &c. of precious stones, or a merchant who deals in them.——*Lapidary-style*, denotes that which is proper for monumental or other inscriptions.

LAPIDES'CENT, a term for whatever has the quality of petrifying or turning to stone. The waters of many springs are impregnated with *lapidescent* particles of spar, and bodies immersed in them being crusted over, are said to be petrified.——The operation of forming or converting into a stony substance, by means of a liquid which crystalises in the interstices, is called *lapidification*.

LA'PIS (*Latin*), stone of any kind; but the term *lapis* is applied by physicians, chemists, &c., to several other substances, as well as to different kinds of stone; as *Lapis Bononiensis*, the Bolognian stone; *Lapis hepaticus*, liver stone, &c.

LA'PIS HIBER'NICUS, a kind of slate, or very hard stone, found in different parts of Ireland, in a mass of a bluish black colour. In the fire it yields a sulphureous gas, and acquires a pale red colour, with additional hardness.

LA'PIS LA'ZULI, in painting, a stone of an azure or blue colour, of which the paint called *ultramarine* is made. It is a combination of silex, the blue fluate of lime and sulphate of lime, and iron; is very compact and hard, and is found in lumps of a beautiful blue colour, richly variegated with clouds of white, and veins of shining gold colour.

LA'PIS MARMO'REUS, in archæology, a marble stone in Westminster Hall, in the midst of which stood a chair wherein our kings anciently sat at their coronation. The courts of Chancery and King's Bench were erected over this stone.

LAPSE, in ecclesiastical law, an omission on the part of the patron to present to a benefice within six months after it is vacant, upon which default the ordinary has a right to collate to the said benefice.——*Lapsed Legacy*, one which falls or is lost by a lapse; as where the legatee dies before the testator, or where a legacy is given upon a future contingency, and the legatee dies before the contingency happens.

LAP'WING, in ornithology, the *Tringa vanellus* of Linnæus, a bird about the size of a pigeon, belonging to the snipe and plover tribe. It is found in Europe in large flocks, except during the pairing season, when it separates for the purposes of incubation.

LAR'BOARD, a sea term for the left hand side of a ship, when looking towards the stem or head; opposed to *starboard*.

LAR'CENY, in law, the felonious and fraudulent taking away the goods or property of another. Larceny was formerly divided in England into *grand* and *petty*; the former being the stealing of an article over the value of one shilling, and the latter not over that sum; but this distinction was abolished by a statute of 7 and 8 George IV.

LARCH, in botany, the *Pinus laria* of Linnæus, a lofty tree of the pine kind, bearing leaves like those of the pine. The gum of this tree is called *Venice turpentine*. The leaves fall off in winter. The timber, which is remarkably durable, is much used in naval architecture, for masts and the framework of vessels, being capable of sustaining much greater pressure even than oak. The American larch, a native of Canada and some parts of the United States, is a noble tree, with a straight trunk, often rising to the height of 100 feet, and giving out numerous slender branches. The celebrated cedar of Lebanon, the largest and most majestic of the *conifers* of the Eastern continent, is a species of larch.

LA'RES, in antiquity, the domestic or household gods among the Romans, which the family honoured as their protectors. They were images of wood, stone, or metal, and generally stood upon the hearth in a kind of shrine.

LAR'GO, and LARGHETTO *(Italian)*, musical terms, directing to slow movement. *Largo* is one degree quicker than *grave*, and two degrees quicker than *adagio*.

LARK, in ornithology, a bird of the genus *Alauda*, distinguished for its singing. The *sky-lark*, which is the most harmonious of this musical family, commences his song early in the spring, and continues it during the whole summer, and is one of those few birds that chant whilst on the wing. When it first rises from the earth, its notes are feeble and interrupted; as it ascends, however, they gradually swell to their full tone, and long after it is lost to the sight it still continues to charm the ear with its melody. It mounts almost perpendicularly, but descends in an oblique direction, unless threatened with danger, when it drops like a stone.——The *wood-lark* is distinguished by its smaller size and less distinct colours. It is generally found near the bor-

THE STORY OF LAOCOON HAS FREQUENTLY FURNISHED A SUBJECT TO THE POETS; AND IT MUST EVER BE A FAVOURITE STUDY FOR THOSE IN ART.



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ders of woods, perches on trees, and sings during the night, so as to be sometimes mistaken for the nightingale.——There are two or three other varieties of this genus, but they are very inferior as songsters to the before-mentioned.

LARK'SPUR, in botany, a plant of the genus *Delphinium* (allied to the ranunculus and columbine), of which there are numerous species. Many of them are common in our gardens, where they are cultivated for the beauty and brilliant colours of their flowers.

LA'RUS, in ornithology, the gull, a genus of birds, order *Anseres*. Birds of this tribe inhabit the coasts of northern countries, feed on fish and carrion, are very voracious, and when frightened discharge the contents of the maw.

LARVA, in entomology, the grub or caterpillar state of an insect; or first stage in the metamorphoses of insects, preceding the chrysalis.

LARYNGOTOMY, in surgery, the operation of cutting the larynx or windpipe, for assisting obstructed respiration, or removing foreign bodies.

LA'RYNX, an organ of the voice, being a cartilaginous cavity connected with the windpipe, and on the size and flexibility of which depend the powers and tones of the human voice. The superior opening of the larynx is called the *glottis*.

LASCAR', in the East Indies, a native seaman, or a gunner.

LAS'SITUDE, among physicians, a morbid sensation or languor, which often precedes disease.

LAST, a measure or weight, as a last of corn, &c. equal to ten quarters, and a last of cod fish, &c. equal to from twelve to twenty-four barrels.

LATEEN' SAILS, triangular sails frequently used by xebecs, polacres, settees, and other vessels navigated in the Mediterranean.

LA'TENT HEAT, is heat in combination, in distinction from *sensible* heat; the portion of heat which disappears when a body changes its form from the solid to the fluid, or from the fluid to the aeriform state.

LAT'ERAL EQUATION, in algebra, a simple equation, whose root is only in one dimension.

LAT'ERAN COUNCILS, those councils held in the basilica of the Latin church at Rome.

LATERIFO'LIOUS, in botany, an epithet for a flower growing on the side of a leaf at the base.

LATERI'TIOUS SEDIMENT, in medicine, a sediment in urine resembling brick-dust, observed after the crises of fevers, &c.

LATH, in carpentry, a long, thin piece of wood, nailed to the rafters of a wall or roof to receive the plaster or covering.

LATHE, an engine used in turning wood, ivory, and other materials. —— *Lathe*, as used in Kent and Sussex, is part of a county, containing three or four hundreds.

LAT'ICLAVE, in antiquity, an ornament of dress worn by Roman senators.

LAT'IN, the language spoken by the ancient Romans, or the inhabitants of Latium, from which it derives its name. The Latin tongue was for a while confined almost wholly within the walls of Rome; nor would the Romans allow the common use of it to their neighbours, or to the nations they subdued: but, by degrees they in time became sensible of the necessity of its being generally understood for the convenience of commerce; and accordingly used their endeavours that all the nations subject to their empire, should be united by one common language, so that at length they imposed the use of it by an express law.

LATITAT, in law, a writ used in personal actions, where the party is to be arrested in any other county than Middlesex.

LATITUDE, in geography, is the distance of any place from the equator, measured in degrees, minutes, and seconds, upon the meridian of that place; and is either north or south, according as the place is situated either on the north or south side of the equator.——In astronomy, it is the distance of a star north or south of the ecliptic.

LATITUDINA'RIAN, in theology, one who indulges a latitude of thinking and interpretation of the scriptures.——In a general sense, it denotes one who is not restrained by precise settled limits in opinion, but is governed by a sense of moderation.

LATRIA, the highest kind of worship, or that paid to God: distinguished by the Catholics from *dulia*, or the inferior worship paid to saints.

LATRO'BITE, a mineral of a pale red colour, massive or crystalized, from an island near the Labrador coast.

LATTEN-BRASS, plates of milled brass reduced to different thicknesses, according to the uses they are intended for.

LAUD'ANUM, in medicine, a soporific tincture, containing the finer and purer parts of opium, drawn in water and spirits of wine and then reduced to its due consistence.

LAUNCE FISH, or SAND LAUNCE, in ichthyology, a fish which buries itself on the recess of the tide a foot deep in the sand. It is generally used for baits.

LAUNCH, a particular kind of flat boat used in underrunning the cables of different ships.

LAU'REATE. In England the *poet laureate* was formerly an officer of the royal bouschold, whose business it was to compose a birth-day ode for the monarch, and another for the new year. These obligations have been dispensed with; and the honour of the laureateship, with the salary, is now given as the reward of high poetic genius.

LAUREATION, in the Scotch universities, signifies the act of taking the degree of master of arts, which the students are permitted to do after four years' study.



CONTAINING THE GREAT GATE THE LATERAN PALACE TO THE POPES, WHO OCCUPIED IT FOR 1000 YEARS, OR TILL THEY RESIDED AT AVIGNON.

THE "GEOCENTRIC LATITUDE" OF A PLANET, IS ITS LATITUDE AS SEEN FROM THE EARTH; ITS "HELIOCENTRIC LATITUDE," AS SEEN FROM THE SUN.

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LAURENTA'LIA, in antiquity, a festival kept by the Romans on the 23rd of December, in memory of Acca Laurentia, the nurse of Romulus and Remus. She was called *Lupa* by way of nick-name; hence the story of the wolf that suckled the royal twins.

LAU'RUS CAM'PHORA, in botany, the systematic name of the camphor-tree.——*Laurus cinnamomum*, the systematic name of the cinnamon-tree. Cinnamon bark is one of the most grateful of the aromatics; of a fragrant smell, and of a moderately pungent taste, accompanied with considerable sweetness and some degree of astringency. It is one of the best cordial carminatives and restorative spices we possess.——*Laurus nobilis*, the sweet bay tree, a native of Italy, but cultivated in our gardens and shrubberies as a handsome evergreen. This is the *laurus* of honorary memory, the distinguished favourite of Apollo.——*Laurus sassafras*, the systematic name of the sassafras-tree. The wood is covered with a rough fungous bark, which has a fragrant smell, and a sweetish, aromatic, and subacrid taste. Its medicinal character was formerly held in great estimation, but it is now seldom used except in conjunction with other medicines, as a corrector of the fluids.

LA'VA the melted compound of minerals and stony matter that flows from burning volcanoes.

LAVAN'DULA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*.——*Lavan'dula Spi'ca*, or Common Lavender, is a plant cultivated in our gardens on account of the fragrance of its flowers. The essential oil, obtained by distillation, is of a bright yellow colour, of a very pungent taste, and possesses, if carefully distilled, the fragrance of the lavender in perfection.

LAVATE'RA, in botany, a genus of plants, class 16 *Monadelphia*, order 6 *Polyandria*. The species are mostly perennials.

LAW, an established or permanent rule, prescribed by the supreme power of a state to its subjects, for regulating their social actions. Laws may be divided into the following classes: declaratory laws; directory laws; remedial laws; and prohibitory and penal laws. *Declaratory laws* only declare what the law shall be, not what it has been, or is. *Directory laws* are those which prescribe rules of conduct, or limit or enlarge rights, or point out modes of remedy. *Remedial laws* are those whose object it is to redress some private injury, or some public inconvenience. *Prohibitory and penal laws* are those which forbid certain things to be done or omitted, under a penalty, or vindicatory sanction. The legislation of no country, probably, ever gave origin to its whole body of laws. In the very formation of society, the principles of natural justice, and the obligations of good faith, must have been recognised before any common legislature was acknowledged. Debts were contracted, obligations created, personal property acquired, and lands cultivated, before any positive rules were fixed as to the rights of possession and enjoyment growing out of them. The first rudiments of jurisprudence resulted from general consent or acquiescence; and when legislation began to act upon it, it was rather to confirm, alter, or add to, than to supersede, the primitive principles adopted into it. The formation of codes, or systems of general law, for the government of a people, and adapted to their wants, takes place only in advanced stages of society, when knowledge is considerably diffused, and legislators have the means of ascertaining the best principles of policy and the best rules for justice, not by mere speculation and theory, but by the results of experience, and the reasoning of the learned and the wise.——We shall now proceed to give separate definitions of the word *law*, as it is variously applied.——*Municipal* or *civil law*, is a rule of civil conduct prescribed by the supreme power of a state, commanding what its subjects are to do, and prohibiting what they are to forbear.——The *law of nature*, otherwise called ethics, or morals, comprehends those rules of right and wrong, of which the sentiment is in every man's breast, and of the justice of which reflection affords sufficient conviction.——The *divine law* is that which, not being naturally felt, nor discovered by reflection, is found only in inspired writings.——The *law of nations* is that rule of conduct which nations are to observe toward each other. This is founded upon the law of nature; but either ascertained or modified by usage, or by mutual compacts.——The *written law*, those laws or rules of action prescribed or enacted by a sovereign or state, and promulgated and recorded in writing.——*Unwritten* or *common law*, a rule of action which derives its authority from long usage, or established custom, which has been immemorially received and recognised by judicial tribunals.——*Ecclesiastical* or *canon law*, a rule of action prescribed for the government of a church.——*Martial law*, the rules ordained for the government of an army or military force.——*Marine laws*, rules for the regulation of navigation, and the commercial intercourse of nations.——*Physical laws*, the invariable tendency or determination of any species of matter to a particular form with definite properties, and the determination of a body to certain motions, changes, and relations, which uniformly take place in the same circumstances.——The *Mosaic law*, the institutions of Moses, or the code of laws prescribed to the Jews, as recorded in the Old Testament. That part which relates to the mere external rites and ceremonies to be observed by them, as distinct from the moral precepts, is called the *ceremonial law*.

LAWN, a superior kind of linen cloth, very similar to open worked cambric. It was formerly made only in France and Flanders; but at present the lawn manufacture is brought to great perfection in Scotland and Ireland, where it bids fair to rival our foreign competitors.

WHATEVER BE THE STRUCTURE OF A PLANT, THE OFFICE OF ABSORPTION IS CARRIED ON BY THE EXTREMITIES ALONE.

PROPERTY, BY THE ENGLISH LAW, IS DIVIDED INTO REAL AND PERSONAL; LAND AND TIMBER BEING REAL; MONEY AND EFFECTS, PERSONAL.



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LAY, an epithet in ecclesiastical law for what belongs to the people, in distinction from those who are in orders.——*Layman*, one who follows secular employments.——*Lay Brothers*, and *Lay Sisters*, in the Romish church, are such as perform the secular and servile offices in a monastery or convent.——*Lay Fee*, lands held in fee of a lay lord, as distinguished from those lands which belong to the church.——*Lay Impropriation*, the impropriating or employing the revenues of the church to the use of a layman.——*Lay Corporation*, any corporation or body which consists of laymen, created for some temporal purpose, as charitable corporations, who are constituted for the perpetual distribution of the free alms of the founder.

LAY'ER, in horticulture, a young shoot or twig bent down and covered with mould for growth or propagation. This operation is performed by slitting the branches a little way, and laying them about half a foot under the mould; the ground being first made very light, and after they are laid, a little water being given them.——*Layer*, among fishermen, a channel or bed in a creek, where small oysters are thrown for breeding.

LAY FIGURE, among painters, a small statue either of wax or wood, whose joints are so formed, that it may be put into any attitude or posture. Its principal use is for adjusting the drapery or clothing.

LAZARETTO, a public building, hospital, or pest-house, for the reception of those afflicted with contagious diseases.

LAZ'ULITE, a minerzl of a slight indigo blue colour, generally granular or occurring in small pieces not exceeding the size of a hazel-nut. It is found in narrow veins, traversing clay-slate, with quarts, in Saltzburg.

LEAD, in mineralogy, *Plumbum*, a metal found in considerable quantity in many parts of the earth, but seldom, if at all, in the pure metallic state. Lead is of a bluish gray colour, and very brilliant when fresh cut, but soon tarnishes from exposure to the air. It is the softest and least elastic of all the metals; easily flattened under the hammer, and ductile in a very great degree, though much less so than gold. It may easily be cut with a knife, and stains the fingers bluish-gray when rubbed. It fuses at 612° Fahr. and renders other more refractory metals fusible, but requires the least degree of fire of all metals, except tin, to put it in fusion. It acquires this fluid state long before it changes its colour; whereas the other metals, except tin, all become red-hot before they run: after melting, it very readily calcines into a gray powder, which, if the fire be increased and the matter often stirred, becomes yellow, and afterwards of a fine florid red: this is the *minium*, or common *red lead* of the shops. If the fire be made yet more vehement, it runs into an oleaginous matter, which, as it cools, becomes of a yellowish or reddish colour, and is composed of a number of thin laminæ: this is litharge. Though these several substances have nothing of the appearance of the metal they are produced from, yet if a little iron-filings be added to them over the fire, or only some pieces of charcoal, or any other oily inflammable matter be thrown in, they become lead again. The greater part of the acids act upon it. Acetic acid dissolves it. When combined with mercury, it forms a crystalisable alloy which becomes fluid when triturated with bismuth. Lead, while in the earth, enters into the substance of crystal. This is frequently the case with that crystal which is found about lead-mines, the figure of which it renders a cube. It often does this without altering the colour: but when it tinges likewise, the tint it gives is yellow.——The topax, among the gems, owes its yellow colour to this metal; and, in the factitious gems, the tint it gives to the composition is always a yellow approaching to that of the topax.——Various preparations of lead are used medicinally; but when injudiciously administered, or taken accidentally into the body, they cause violent colics, paralyses, tremors, and contractions of the limbs; and as they generally come on gradually, the cause is often overlooked till it be too late. Poisoning from lead arises either from liquors becoming impregnated with lead, by being improperly kept in vessels, lined or glazed with lead, or to which lead has been criminally added, to correct its acidity; or among manufacturers who work much with lead, as plumbers, painters, &c. The presence of lead in any suspected liquor, is detected by the hydro-sulphuret of potash, which forms with it a dark brown precipitate, not soluble in diluted muriatic acid; and still more certainly by evaporating a portion of the liquor to dryness, and exposing the extract to a heat sufficient to reduce the lead.

LEAF *(folium)*, in the natural history of plants, a very essential and ornamental part of them; for, by its numerous pores, the leaf absorbs the gases which are adapted for the nutritiou of the plant, or exhales those which have become useless for that purpose. The variation of the leafing of trees, their peculiar properties and appearances, their exhilarating effects when bursting forth in spring, and the fall of "the sere and yellow leaf" at the approach of winter, furnish the mind with matter for continual reflection, in a moral point of view, as furnishing most striking emblems of the successive periods of human life.—Light and air, which so essentially influence the vegetable kingdom, act chiefly on the leaves; and they have not unaptly been compared to the animal organs of respiration. The leaf changes whatever passes through it into the plant from without: sound and green leaves, in the sun, exhale oxygen and absorb carbonic acid gas; but by night, or in the dark, they give out carbonic acid gas, and absorb oxygen from the air. The importance of leaves to plants is shown by the fact that no plant can grow, or form blossoms, or fruits, if deprived of leaves. They also form an im-



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portant characteristic in the subdivision of plants, and are divided into simple and compound; the latter class consisting of those in which several leaves are supported on one footstalk.—The *lobe* of a leaf is the segment around the apex.—*A leaflet* is one of the divisions of a compound leaf. —A *leaf-stalk* is the petiole or stalk which supports a leaf.

LEAGUE, in geography, a measure of length, containing a certain number of geographical paces, according to the usage or computation of different countries. A league at sea, where it is mostly used by us, is equal to three English miles, or 3000 geometrical paces: the league in France contains 3500 paces: the Dutch or German league, four geographical miles.—*League*, in politics, a treaty of alliance between different states or parties. It may be *offensive* or *defensive*, or both. It is *offensive*, when the contracting parties agree to unite in attacking a common enemy; *defensive*, when the parties agree to act in concert in defending each other against an enemy.

LEAK'AGE, in commerce, an allowance made to merchants for the leaking of casks, or the waste of liquors by leaking.

LEAP YEAR. [See BISSEXTILE.]

LEASE, in law, a demise of lands or tenements, or a conveyance of them, generally in consideration of rent or other annual recompense, for term of years, for life, or at will, provided it be for a shorter term than the lessor has in the premises. The party letting the lands, &c. is called the *lessor*, and the party to whom they are let, the *lessee*. Any one of the conditions of a lease not being complied with, the proprietor may resume possession.—*Lease and Release*, as used in our law, signifies a certain instrument in writing, for the conveyance of a right or interest in lands and tenements in fee to another.

LEASH, in sporting, the number three, as a *leash* of birds, a *leash* of greyhounds, &c. Also, a leather thong by which a falconer holds his hawk.

LEATH'ER, the skin of animals, prepared by the fellmonger, tanner, and dyer, and used for various purposes of clothing and furniture. The first takes off the hair, &c.; the second expels the unctuous parts, and substitutes oak bark and the tanning principle in the pores; and the latter furnishes and dresses it for use.

LEAV'EN, a piece of sour dough, used to ferment and render light a much larger quantity of dough or paste. During the seven days of the passover, no leaven was permitted to be in the houses of the Jews.

LEDG'ER, the principal book used in merchant's accounts, wherein every man's particular account is kept; the book into which a summary of the journal is carried. —*Ledger-lines*, in music, those lines added to the usual stave of five lines, when more are wanted for notes ascending or descending.

LEE, a sea term for that part which the wind blows upon, or that is opposite to the wind, as the *lee shore*. Literally, a place defended from the wind.—*Under the lee of a ship*, on the side opposite to that on which the wind blows.—*Under the lee of the land*, near the shore which breaks the force of the wind.—*Lee-side*, the side of a vessel farthest from the point whence the wind blows.—*Lee-tide*, a tide running in the same direction that the wind blows.—*Lee-lurch*, a sudden and violent roll of a ship to leeward in a high sea.—*Leeward*, pertaining to the part towards which the wind blows.

LEECH (the *Hirudo* of naturalists), a well known insect that lives in the water, and is commonly used in bleeding. The two principal species are the medicinal leech, which is employed to draw blood where the lancet is less safe; and the horse-leech, which is larger, and applied to horses for the same purpose. The leech's mouth is armed with a sharp instrument which makes three wounds, through which it sucks blood, and is, therefore, very useful in topical inflammations. The leech has no intestinal canal, but retains the blood for a considerable time, appearing to thrive upon it. As it generally happens that leeches have to be applied in the absence of the medical practitioner, the following observations may be of service: Previous to their application the skin should be very carefully cleansed from any foulness, and moistened with a little milk, and if retained by a small wine-glass, or the bottom of a pill-box, they will generally in a little time fasten themselves to the skin. On their removal, the rejection of the blood they have drawn may be obtained by the application of salt externally; of which a few grains are quite sufficient for the purpose.

LEG'ACY, in law, a bequest or gift by will of any personal effects; the person bequeathing is called the *testator*, and he to whom it is bequeathed the *legatee*. There is also a *residuary legatee*, or one to whom, after the several devises or bequests made by will, the residue of the testator's estate and effects are given. If a legacy is bequeathed, and no certain time of payment mentioned, and the legatee is an infant, he will be entitled to interest for his legacy from the expiration of a year after the death of the testator, which time is allowed an executor to see whether there be any debts; but when the legatee is of full age, he has no interest but from the time of the demand of the legacy; and if the legacy given is payable at a certain day, it must be paid with interest from that day.

LEG'ATE, the pope's ambassador to foreign countries; either a cardinal or a bishop. The power of a legate is sometimes given without the title. It was one of the ecclesiastical privileges of England from the Norman conquest, that no foreign legate should be obtruded upon the English, unless the king should desire it upon some extraordinary emergency, as when a case was too difficult for the English prelates to determine.

LEGATION, a term denoting the body

THE METHOD OF MAKING LEAVEN, AS PRACTISED BY THE ANCIENTS, WAS TO LET SOME DOUGH STAND IN A WARM PLACE 36 HOURS.

OF ALL ASTRINGENT SUBSTANCES, CATECHU CONTAINS THE LARGEST PROPORTION OF TANNIN, SO INDISPENSABLE IN PRODUCING LEATHER.



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LET NO MAN VOTE FOR A NEW LAW WHO IS IGNORANT OF THE OLD.



LEMON-JUICE SOON SPOILS BY KEEPING, THE MUCILAGE IT CONTAINS BEING QUICKLY CHANGED BY SPONTANEOUS DECOMPOSITION.

ORANGES CONTAIN MALIC ACID, BUT THE LEMON A LARGE QUANTITY OF CITRIC ACID; HENCE THE LEMON IS SO SHARP AND PUNGENT.

of official persons attached to an embassy. Hence *secretary of legation*.

LEGA'TO *(Italian)*, in music, a word used in an opposite sense to *staccato*, and implying that the notes of a movement or passage to which it is affixed are to be performed in a close, smooth, and gliding manner.

LE'GEND, a book used in the ancient Roman churches, containing the lessons that were to be read. The word was afterwards used to denote a chronicle or register of the lives of saints. As these histories were often nothing more than pious fictions, the name of a *legend* was given to the incredulous fables which make pretensions to truth.——*Legend*, in Roman antiquity, signifies the motto engraved upon medals, which differs from the inscription properly so called. The *inscription* signifies words placed on the reverse of a medal in lieu of figures; but the legend is the word made use of round the head or other figure.

LE'GERDEMAIN, tricks which, from the dexterity of the performer, are made to deceive the observer, and are called *sleight of hand*.

LE'GION, in Roman antiquity, a body of soldiers in the Roman army, consisting of different numbers at different periods of time. In the time of Romulus the legion consisted of 3000 foot and 300 horse; though after the reception of the Sabines, it was augmented to 4000. In the war with Hannibal it was raised to 5000; after this it sunk to 4000 or 4500, which was the number in the time of Polybius. The number of legions kept in pay together, also differed according to times and occasions. Each legion was divided into ten cohorts, each cohort into ten companies, and each company into two centuries. The chief commander of the legion was called *Legatus* (lieutenant). The principal standard of a legion was a silver eagle; and the legions were named from their commanders (as the *Claudian legion*), or from the place where they were stationed, &c. The word *legion* was revived in the time of Napoleon, and has since been commonly applied to a body of troops of an indefinite number, and usually of different kinds; as the *English-German legion*, the *British legion* in Spain, &c.

LE'GION OF HONOUR, an order instituted by Napoleon, while consul (May 19, 1802), for military and civil merit. It consisted of different grades of merit, as grand crosses, crosses, commanders, officers, and legionaries; all of whom receive pensions with this mark of distinction.

LE'GISLATURE, the supreme power of a state. [See CONSTITUTION, COMMONS, PARLIAMENT, &c.]

LEGITIMACY, a word which, in a political sense, is variously defined, according to the bias of the party by whom it is used. But in its most commonly received acceptation, it denotes the lawfulness of the government, in an hereditary monarchy, where the supreme dignity and power pass by law from one regent to another, according to the right of primogeniture.——*Legitimate* means *according to law*; hence, children born in wedlock are called legitimate, and those born out of wedlock are styled illegitimate.

LEGU'MEN, in botany, a pericarp, or seed-vessel, termed a pod, as the seed-vessel of the pea, vetch, lupine, &c., which are called *leguminous* plants.

LEM'MA, in mathematics, a preliminary proposition which serves to prepare the way for the demonstration of some other proposition.

LEM'MING, in zoology, an animal belonging to the genus *Mus*; a kind of rat, in the north of Europe, which sometimes migrates from north to south in immense numbers.

LEM'NIAN EARTH, a kind of astringent medicinal earth from the isle of Lemnos, in the Ægean sea. It has the external appearance of a reddish clay, and is saponaceous.

LEM'ON, the fruit of a tree belonging to the genus *Citrus*, originally brought from the tropical parts of Asia, but now grown in the south of Europe and other warm climates. The shape of the fruit is oblong, but its internal structure does not differ from the orange. The juice is acid and cooling, and furnishes that agreeable beverage called *lemonade*.——The preparation called *salt of lemons*, &c. used to remove ink-stains from linen, is the native salt of sorrel, the super-oxalate of potash. The effect is produced by the oxalic acid dissolving with facility the oxyde of iron in the ink, on the combination of which with the tannin and gallic acid the colour depends; while, at the same time, it can be used without any risk of injury to the cloth, on which it has no effect.

LE'MUR, a genus of quadrupeds (the *Makis* of Cuvier) which resembles the monkey in the form of the feet, but are very different from that animal in its temper and habits.

LE'MURES, among the ancient Romans, spectres or ghosts, believed to be the souls of the dead, which tormented men in the night. In order to lay them, a ceremony called *lemuria* was observed on the nights of the 9th, 11th, and 13th of May.

LEN'TITIVE ELECTUARY, in pharmacy, a preparation composed chiefly of senna and some aromatics, with the pulp of tamarinds. It is used as a mild laxative.

LENS, in optics, a piece of glass, or other transparent substance, which either collects the rays of light into a point, in their passage through it, or makes them diverge, according to the laws of refraction, and to magnify or diminish objects at a certain distance. [See OPTICS, CONCAVE, &c.]

LENT, a solemn time of fasting and abstinence in the Christian church, observed as a time of humiliation before Easter, the great festival of our Saviour's resurrection. It begins on Ash-Wednesday, and continues forty days.

LENTIC'ULAR, a surgical instrument employed for removing the jagged particles



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of bone from the edge of the perforation made in the cranium with the trephine.

LENTICULITE, a petrified shell.

LENTI'GO, in medicine, a freckly eruption on the skin.

LEN'TIL, in botany, a plant of the genus *Ervum*. The seeds, which are contained in a pod, are round, flat, and rather convex in the middle. It is cultivated for its seeds, which afford a nutritious food, and also as fodder for cattle.

LENTIS'CUS, in botany, the *Mastich*, a tree of the genus *Pistacia*, the wood of which is resinous, fragrant, and of a pale brown colour. It is a native of Asia and the south of Europe.

LEN'TOR, in medicine, the viscid coagulated part of the blood, which, in malignant fevers, obstructs the capillary vessels.

LEN'ZINITE, in mineralogy, a variety of clay, occurring usually in small masses of the size of a nut. There are two kinds, the opaline and argillaceous.

LE'O, the *Lion*, in astronomy, one of the twelve signs of the zodiac, the fifth in order.

LEONINE VERSE, a kind of Latin verse, consisting of hexameters and pentameters, of which the final and middle syllables rhyme. Some say it derived its name from pope Leo I. (A.D. 680); others from Leonius, a poet of the 12th century.

LEOPARD, in zoology, a rapacious animal of the genus *Felis*, four or five feet long, of a yellow colour, and elegantly spotted, so as to render its skin an ornament of luxury. It is chiefly found in Senegal; its habits are those of the tiger, but it is seldom dangerous to man. From the extraordinary flexibility of the limbs of this animal, he is enabled to ascend trees, in which he usually takes refuge when pursued. In India there is a smaller species tamed for hunting.

LEPIDOLITE, a mineral of a lilac or peach-blossom colour, found both massive and in small concretions. It is sometimes called *lilalite*.

LEPIDOPTERA, in entomology, the third order of insects in the Linnean system, which have their wings imbricated with fine scales, like powder, as the butterfly, moth, &c.

LEPROSY, a foul, cutaneous disease, appearing in dry, white, thin, scurfy scales, either on the whole body or some part of it. The leprosy is of various kinds; that which the Jews were particularly subject to is called elephantiasis, or black leprosy: hence the Jewish law excluded lepers from communion with mankind, banishing them into the country or uninhabited places, without excepting even kings.

LE'PUS, the Hare, [which see.]—*Lepus*, in astronomy, a constellation of the southern hemisphere.

LETH'ARGY, a heavy and constant sleep; a disease arising from cold, phlegmatic humours which oppress the brain, and cause an incessant drowsiness. It is considered as an imperfect apoplexy, and is mostly symptomatic.

LETHE, in the ancient mythology, one of the rivers of hell, signifying oblivion or forgetfulness; its waters having, according to poetical fiction, the peculiar quality of making those who drank of them entirely forget every thing that was past.

LETTER, a mark or character, written, printed, or engraved; used as the representative of a sound, or of an articulation of the human organs of speech. As sounds are audible, and communicate ideas to others by the ear, so letters are visible representatives of sounds, and communicate the thoughts of others by means of the eye.——A *letter* is also the medium of epistolary correspondence.——*Letter of credit*, among merchants, is a letter written by a merchant or banker to his correspondent abroad, requesting him to credit the bearer as far as a certain sum.——*Letter of attorney*, in law, a document or writing whereby a person constitutes another to do a lawful act in his stead, as to receive debts, &c.——*Letter of licence*, an instrument or writing granted by a person's creditors, allowing him a certain time for the payment of his debts; by which means he is enabled to prosecute his business without legal molestation.——*Letter of marque*, an extraordinary commission granted to commanders of merchant-ships, or others in time of war, to make reprisals on the enemy. The ship so commissioned is also called a *letter of marque*.——*Letter missive*, a letter sent out of Chancery in a process of law against a peer.——*Letters-patent*, are writings sealed with the great seal of England; so called, because they are open with the seal affixed to them. These are granted to authorise a man to do some act, or enjoy some right.

LEVEL, in mechanics, an instrument to draw a line parallel to the horizon, by means of which the true level, or the difference of ascent or descent between several places, may be found. The instruments for this purpose are various; as the air-level, the carpenter's level, the mason's level, the gunner's level, mercurial levels, surveying and spiral levels, &c.; but their varieties are too numerous for us to insert a description of them here.——The art of *levelling* is particularly applied to the laying out grounds even, regulating descents, draining morasses, conducting water, &c.; and, in fortification, the reducing an uneven surface to that of a plane, so that the works may be of a corresponding height and figure.

LEUCINE, in chemistry, a peculiar white pulverulent substance obtained from the fibres of beef, treated with sulphuric acid, and afterwards with alcohol.

LEUCITE, in mineralogy, a white stony substance found among volcanic productions in Italy, in crystals or irregular masses; formerly called crystals of white shorl, or granilite.

LEUCOPHLEGMATIC, in medicine, an epithet for a dropsical habit of body with a white bloated skin.

LEUCOTHIOP, an Albino, or a white man of a black race.

LEUTHRITE, in mineralogy, a grayish



THE NEGROES TAKE LEOPARDS IN PITFALLS, SLIGHTLY COVERED OVER WITH HURDLES, ON WHICH A PIECE OF MEAT IS PLACED AS A BAIT.

"I AM OF OPINION," SAYS SIR R. STEELE, "THAT WRITING HAS LOST MORE MISTRESSES THAN ANY ONE MISTAKE IN THE LEGEND OF LOVE."

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white substance that appears to be a recomposed rock, of a loose texture, gritty and harsh to the touch.

LEVANT, a name given to the countries of Turkey, Syria, Asia Minor, Greece, Egypt, &c.; which are washed by the Mediterranean and its contiguous waters.

LEVATORS, in anatomy, an appellation given to several muscles, whose office is to lift up the part to which they are respectively attached. Thus the *levator anguli oris*, situated above the mouth, draws the corner of the mouth upwards, and makes that part of the cheek opposite to the chin prominent, as in smiling. And the *levator palpebræ superioris*, the muscle that opens the eye, by lifting the upper eyelid.

LEVANTINE, an epithet for things pertaining to the Levant. Also, a particular kind of silk cloth.

LEVARI FACIAS, in law, a writ directed to the sheriff for levying a sum of money upon lands on a person who has forfeited his recognizance.

LEVEE, in court phraseology, a ceremonial visit of the nobility, gentry, &c. who assemble to pay their respects to the queen (or king). It consists of gentlemen only, by which it is distinguished from what is termed a *drawing-room*, where ladies as well as gentlemen attend.

LEVEE-EN-MASSE, a military expression for the patriotic rising of a whole people, including all capable of bearing arms, who are not otherwise engaged in the regular service; and is the most formidable obstacle, an enemy can encounter. In Germany it is called the *landsturm*, in distinction from the *landwehr*, or militia. In 1813 the governments of Northern Germany called it forth in every part of the country.

LEVER, one of the mechanical powers, consisting of an inflexible right line, rod or beam, supported on a fulcrum or top, and used for the raising of weights, having itself such a weight as may be commodiously counterbalanced. Its arms are equal, as in the *balance*; or unequal, as in *steelyards*. Of all machines it is the most simple.

LEVIATHAN, a word which, in the Hebrew, signifies a great fish. Some suppose, from the description of it in the book of Job, it means a whale, while others have presumed it is a crocodile. In Isaiah, however, it is called the crooked serpent.

LEVIGATION, the mechanical operation or process of grinding the parts of bodies to a fine paste, by rubbing the flat face of a stone called a muller upon another stone called the table or slab.

LEVITES, a term applied in Scripture to such of the tribe of Levi as were employed in the lower offices and ministries of the temple. In this particular, they were distinguished from the priests, who, being descended from Aaron, were likewise of the tribe of Levi. The Levites bore some resemblance in the tabernacle, and temple of the Jews, to the deacons among Christians. They were employed in bringing wood, water, and other necessaries for the sacrifice, and they sung and played upon instruments in the temple. They also applied themselves to the study of the law, and were the ordinary judges of the country, though always subordinate to the priests. Their subsistence was the tithes of corn, fruit and cattle throughout Israel; but the priests were entitled to a tenth of their tithes, by way of first fruits to the Lord.

LEVITICUS, a canonical book of the Old Testament, so called from its containing the laws and regulations relating to the priests, Levites, and sacrifices. These duties, rites, and ceremonies, formed what is termed the *Levitical law*.

LEVITY, in physiology, the privation or want of weight in a body, when compared with another that is heavier; in which sense it stands opposed to *gravity*.

LEXICOLOGY, that branch of literature which treats of the proper signification and just application of words.

LEXICON, a book containing an alphabetical arrangement of the words of a language, with an explanation of the meaning of each word.

LEY, or LEES, in chemistry, a term applied to any alkaline solution made by levigating ashes that contain an alkali.——*Lees of wine* are the refuse or sediment of wine standing quiet.

LEYDEN JAR, in electrical experiments, a glass jar, having the outside and the inside coated with tin foil, and a brass wire, the upper part of which terminates in a ball of the same metal, and the lower part in a chain that communicates with the inside. This jar admits of being charged so as to produce the electrical shock and various other experiments illustrative of the power of electricity.

LIBEROLITE, in mineralogy, a variety of pyroxene, of an emerald green colour, brilliant when crystalized, and translucent.

LIAS, in geology, a peculiar formation or species of limestone, occurring in flat, horizontal strata. It consists of thick, argillaceous deposits, which constitute the base on which the oolitic series reposes. The lias clay often occurs in the form of soft slate or shale, which divides into very thin *lamina*, and is frequently much impregnated with bitumen and iron pyrites. It also contains a considerable quantity of common salt, and sulphate of magnesia and soda; in consequence of which, springs of water rising through it contain these salts in solution, as Cheltenham. Lias is remarkable for the number and variety of its organic remains, many of which are very curious.

LIBATION, among the Greeks and Romans, was an essential part of solemn sacrifices. It was also performed alone, as a drink offering, by way of procuring the protection and favour of the gods, in the ordinary affairs of life. At sacrifices, after the libation had been tasted by the priest, and handed to the by-standers, it was poured upon the victim. At entertainments, a little wine was generally poured out of the cup, before the liquor began to circulate, to

IN CONSEQUENCE OF THE EARTH'S CONVEXITY, IT IS USUAL, IN LEVELLING, TO ALLOW FOR IT EIGHT INCHES IN A MILE.

THE ARGILLACEOUS LIME-STONE, CALLED "LIAS," IS, FROM ITS FINE GRAINED TEXTURE, PREFERABLE TO ALL OTHER STONES FOR LITHOGRAPHY.



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show their gratitude to the gods for the blessings they enjoyed. The libations to the dead were not performed till the ninth day after the burning or interment; and consisted of milk, wine, or blood, and generally concluded the funeral solemnities.

LI'BEL, in law, the malicious defamation of any person, either written or printed, in order to provoke him to anger, or to expose him to public hatred, contempt, or ridicule. Any book, pamphlet, writing, or picture, containing such representations, although only communicated to a single person, is considered in law a publication of it; and libellers may be brought to punishment by a prosecution, or be compelled to make reparation by a civil action. The civil action is grounded upon the injury which the libel is supposed to occasion to the individual; the public prosecution upon its tendency to provoke a breach of the peace. It is immaterial with respect to the essence of a libel, whether the matter of it is true or false, since the provocation, and not the falsity, is the thing to be punished *criminally*; though, without doubt, the truth of a libel will in many cases entitle the defendant to the merciful consideration of the court, when it decides upon the degree of punishment to be awarded. But in a *civil* action, a libel must appear to be false as well as scandalous. In a civil action, the plaintiff recovers damages, the amount of which is settled by the jury: but, upon an indictment, the jury has merely to acquit the defendant, or to find him guilty, after which the court passes judgment.——*Libel*, in the ecclesiastical and admiralty courts, is the name given to the formal written statement of the complainant's ground of complaint against the defendant.

LIBELLU'LA, or *Dragon-fly*, in entomology, a genus of insects of the order *Neuroptera*, of which there are sixty species. The whole tribe of the libellula are remarkable for being very ravenous: they are usually found hovering over stagnant waters, and may in the middle of the day be observed flying with great rapidity in pursuit of the smaller insects. These brilliant and beautiful creatures were once, and for a considerable time, inhabitants of the water: in that state, as larvæ, they are six-footed and very active. The *Libellula varia*, or great variegated libellula, which makes its appearance towards the decline of summer, is an insect of singular beauty. The female drops her eggs in the water, which on account of their specific gravity fall to the bottom; after a certain period they are hatched into larvæ. In the larva and pupa state they remain full two years, and when they have attained their size they prepare for their ultimate change, and creeping up the stem of some water plant, they make a sudden effort, by which the skin of the back and head is forced open, and the enclosed libellula emerges. This process is always performed in a morning and during a bright sun shine. In this and the other species of the libellula tribe, the structure of the eye is deserving of notice. According to Lewenhoek there are more than 12,000 lenses in each eye of this animal.

LIB'ERAL ARTS, such as depend more on the exertion of the mind than on manual labour, and regard intellectual improvement and amusement, rather than the necessity of subsistence.

LI'BER, in botany, the inner bark of a plant, or third integument, which is membranaceous, juicy, and flexible. From this is gradually formed the wood.

LIBERTUS, in Roman antiquity, a person who from being a slave had obtained his freedom. The *liberti* were such as had been actually made free themselves; the *libertini* were the children of such persons.

LIB'ERTY, in general, denotes a state of freedom, as distinguished from slavery. According to Cicero, it is the power of living as a man pleases, or without being controlled by another: in a legal sense, liberty signifies some privilege that is held by charter or prescription. Liberty is of various kinds:—1. *Natural* liberty is a state of exemption from the control of others, and from positive laws and the institutions of social life. 2. *Civil* liberty is the security from the arbitrary will of others, which is afforded by the laws. 3. *Political* liberty is civil liberty in a more extensive sense: it properly designates the freedom of a nation or state from all unjust abridgment of its rights and independence by another nation. 4. *Religious* liberty, or *liberty of conscience*, is the free right of adopting and enjoying opinions on religious subjects, and of being allowed to worship the Supreme Being according to the dictates of conscience, unfettered by external control.——*Liberty of the press*, the free power of publishing what one pleases; subject, however, to punishment for publishing what is mischievous to the public morals, or injurious to individuals. That this glorious privilege should be so monstrously abused as it is at present, every right-minded individual in the country must seriously deplore. How true, alas! is the trite remark, that the liberty of the press, though intended as a boon to society, often becomes a curse!——The *cap of liberty* (blue, with a white border) is used in England as a symbol of the constitutional liberty of the nation, and Britannia sometimes bears it on the point of her spear; though she has more commonly the trident of Neptune. In France, a red cap was the badge of the Jacobin club.

LI'BRA, in astronomy, the *Balance*, the sixth sign of the zodiac; so called because when the sun enters it, the days and nights are equal.——*Libra*, in Roman antiquity, a pound weight; also a coin, equal in value to twenty denarii.

LI'BRARY, a word used either to denote a collection of books, or the apartment or edifice for holding them. The first public library of which we have any certain account in history, was founded at Athens by Hipparchus, 526 B.C. The second of any note was founded at Alexandria by Ptolemy Philadelphus 284, and was burnt by the Roman army 47 B.C., 400,000 valuable books





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THE MOORS IN SPAIN HAD, IN THE TWELFTH CENTURY, SEVENTY PUBLIC LIBRARIES, THAT OF CORDOVA CONTAINING 250,000 VOLUMES.

being destroyed in that conflagration. A second library, formed from the remains of the first at Alexandria, by Ptolemy's successors, and reputed to have consisted of 700,000 volumes, was totally destroyed by the Saracens, at the command of the caliph Omar, A.D. 642. How many treasures of ancient lore were thus irremediably lost, must ever remain unknown; but it is more than probable, when we consider the labour of transcribing, that a very trifling portion of the literature of different ages has been preserved to us. The most valuable libraries in Europe, at present existing, are stated to contain printed books and manuscripts as follows:—The Royal Library, Paris, 700,000 vols. and 80,000 MSS. The Bodleian Library, Oxford, 420,000 vols. and 30,000 MSS. The Royal Central, Munich, 500,000 vols. and 16,000 MSS. The Vatican, Rome, 100,000 vols. and 40,000 MSS. University, Göttingen, 300,000 vols. and 5,000 MSS. British Museum, 308,000 vols. and 22,000 MSS. Vienna, 350,000 vols. and 16,000 MSS. St. Petersburg, 400,000 vols. and 16,000 MSS. Naples, 300,000 vols. and 6,000 MSS. Dresden, 300,000 vols. and 2,700 MSS. Copenhagen, 400,000 vols. and 20,000 MSS. Berlin, 250,000 vols. and 5,000 MSS. The foregoing being given in round numbers, it can only be regarded as comparatively correct; but it serves to convey some idea of the vastness of these collections as well as their relative magnitudes.

LIBRATION, in astronomy, an apparent irregularity of the moon's motion, whereby she seems to librate about her axis, sometimes from the east to the west, and now and then from the west to the east; so that the parts in the western limb or margin of the moon sometimes recede from the centre of the disk, and sometimes move towards it, by which means they become alternately visible and invisible to the inhabitants of the earth.——*Libration of the earth*, is sometimes used to denote the parallelism of the earth's axis, in every part of its orbit round the sun.——*Libration*, in mechanics, a term signifying a balance, but more particularly the oscillating movement of a pendulum.

LI'CENSE, in law, an authority given to a person to do some lawful act. A license is a personal power, and therefore cannot be transferred to another. If the person licensed abuse the power given him, he becomes a trespasser. A license may be either verbal or written; when written, the paper containing the authority is called a *license*.

LICEN'TIATE, in law, one who has full license to practise any art or faculty; generally, a physician who has a license to practise, granted by the college of physicians.

LICH'EN, in botany, a genus of the *cryptogamia* class of plants, in the order *alga*, which have the most perfect fructification of all the mosses: the flowers are monopetalous, standing on a pedicle, and divided into segments at the limb, somewhat like stars, buttons, mushrooms, &c. In this family of plants there are about 1200 known species; and they are common every where, adhering to rocks, the trunks of trees, and barren soil. They are generally perennial, and grow by receiving moisture through all parts of their surface. Among them is the *Lichen Icelandicus*, a plant whose medicinal properties have been highly extolled as a remedy in consumptive disorders. It is extremely mucilaginous, and to the taste bitter, and somewhat astringent. Dr. Crichton observes, that during seven months' residence at Vienna, he had frequent opportunities of witnessing its effects, and that, though cures were sometimes effected, it by no means answered the high expectations he had formed of it. That it strengthens the digestive powers, and proves extremely nutritious, there can, however, be no doubt. It is commonly given in the form of a decoction: an ounce and a half of the lichen being boiled in a quart of milk: of this a tea-cup full is directed to be drunk frequently in the course of the day.

LICHENOG'RAPHY, the science which illustrates the natural history of the lichens.

LIC'TORS, in Roman antiquity, officers or beadles who carried the fasces before the chief magistrates whenever they appeared in public. It was also a part of their duty to be the public executioners in beheading, scourging, &c. A dictator was attended by twenty-four lictors; a consul by twelve; the master of the horse, six; a prætor, six; and each vestal virgin had one.

LIEGE, in law, a term used either as *liege lord*, signifying one that acknowledges no superior, or the chief lord of the fee; or as *liege man*, he who owes homage and allegiance to the liege lord. By the term *liege people* is meant the subjects of a monarch, because they owe him their allegiance.

LIEN, in law, the right which one person, in certain cases, possesses of detaining property belonging to another, when placed in his possession, until some demand, which the former has, is satisfied. Liens are of two kinds: *particular liens*, that is, where the person in possession of goods may detain them until a claim which accrues to him from those identical goods is satisfied; and *general liens*, that is, where the person in possession may detain the goods, not only for his claim accruing from them, but also for the general balance of his account with the owners. Some liens also are created by express agreement, and some by usage.

LIEN'TERY, in medicine, a kind of diarrhœa, wherein the food passes immediately through the intestines with little or no alteration.

LIEUTEN'ANT, an officer who supplies the place, and discharges the office of a superior in his absence. Of these, some are civil, as the lord-lieutenants of kingdoms, and the lord-lieutenants of counties; and others are military, as the lieutenant-general, lieutenant-general of the artillery, lieutenant-colonel, lieutenant of the Tower, lieutenants of horse, foot, or of ships of war.——The *Lord-lieutenant of Ireland* is properly a viceroy, and has all the state and grandeur

THE ROMAN LICTORS WERE FREE MEN, BUT THEY WERE GENERALLY CHOSEN FROM AMONG THE LOWEST CLASSES OF THE PEOPLE.



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of a king of England, except being served upon the knee. He has the power of bestowing certain offices under the government, of creating knights, and of pardoning all crimes except high treason. He used also to call and prorogue the parliament, but no bill could be passed without the royal assent.—— *Lord-lieutenants of counties*, are officers who, upon any invasion or rebellion, have power to raise the militia, and to give commissions to colonels and other officers, to arm and form them into regiments, troops, and companies. Under the lord-lieutenants are *deputy-lieutenants*, who have similar power; these are chosen by the lord-lieutenants, out of the principal gentlemen of each county, and presented to the king for his approbation.——*Lieutenant-general* is an officer next in rank to the general.——*Lieutenant-colonel* is the officer between the colonel and major.——A *lieutenant*, simply, is the officer next below a captain. In the navy, there are *first* and *second* lieutenants, with different pay.

LIFE, in a general sense, is that state of animals and plants, or of any organized beings, in which their natural functions and motions are performed, or in which the organs are capable of performing their functions. The life of an animal body may also be spoken of in a chemical and a physiological sense. 1. *Its chemical life*, which consists in that attraction of the elements, by which the vital principle, diffused through the solids and fluids, defends all the parts of the body from putrefaction. 2. *Its physiological life* consists in the action of inorganic parts proper to each, as the action of the heart and vessels; so that, these actions ceasing, the body is said to be physiologically dead. In the "Medico-Chirurgical Review" it is stated, that Dr. Caspar, of Berlin, after having examined the current opinions on the average duration of human life, and the most satisfactory method of ascertaining such a result, concludes by embodying the general principles of his researches as follows:—1. The proportion of births to the actual stationary population of any place, expresses, or is relative to, the medium duration of life in that population. (For example, suppose this proportion to be in the ratio of one to twenty-eight, and the average life of the inhabitants of the place will be found to be twenty-eight years.) 2. The female sex enjoys at every period of life, except at puberty (at which epoch the mortality is rather greater among young females), a greater longevity than the male sex. 3. Pregnancy and labour occasion, indeed, a considerable loss of life; but this loss disappears, or is lost, in the general mass. 4. The so-called climacteric periods of life do not seem to have any influence on the longevity of either sex. 5. The medium duration of life, at the present time, is in Russia about twenty-one years; in Prussia, twenty-nine; in Switzerland, thirty four; in France, thirty-six; and in England, thirty-eight years. 6. The medium duration of life has, in recent times, increased very greatly in most cities of Europe. 7. In reference to the influence of professions or occupations in life, it seems that ecclesiastics are, on the whole, the longest, and medical men the shortest livers; military men are nearly between the two extremes; but yet proportionally, they, more frequently than others, reach very advanced years. 8. The mortality is generally greater in manufacturing than in agricultural districts. 9. Marriage is decidedly favourable to longevity. 10. The mortality among the poor is always greater than among the wealthier classes. 11. The mortality in a population appears to be always proportionate to its fecundity: as the number of births increases, so does the number of deaths at the same time.

LIFE-BOAT, a vessel so constructed as to be able to put to sea in the most stormy weather, and withstand the fury of a tempestuous sea; whereby many lives are annually saved from wrecks and vessels in distress.——By an article in the "Railway Magazine," we are informed that a new safety boat has been built by a Mr. Francis, of New York. It is described as being 28 feet long and 5¼ wide, the planks overlapping, and fastened with copper nails. The side planking is double, within which are fourteen tubes 13 feet long, extending from the keel to the deck, and holding fifty-two feet of hydrogen gas, which will buoy up about 4000 pounds weight, when the boat is filled with water. To the sides of the boat are attached twenty life-ropes, which could sustain 100 persons if necessary.—— *Life-Ships.* It appears that Mr. Williams, of the Dublin Steam Company, has improved upon the Chinese plan of dividing the hull of a vessel into sections, each of which should be completely water-tight. He divides the vessel into five compartments by means of four bulk-heads of iron. The central section of this division is occupied by the engine boiler and coal bankers, thus detaching them entirely from all other parts of the vessel; while the others are so arranged, that it may safely be said, that, unless the water break into the vessel in all its sections at the same time (which may be considered impossible), there can be no danger of submersion; and experience has proved that a small addition of buoyancy would prevent a vessel from sinking, after it had been so immersed that the deck was level with the surface of the sea. Nor is the protection which these iron bulk-heads afford against fire scarcely less important. The circumstance of any part of a vessel taking fire is followed by the same evil as that of the irruption of water or collision; namely, its irresistible transmission, at once, through all parts of the vessel; but these iron bulk-heads, being air-tight, must stop the spread of flame by preventing the introduction of any draft or current of air, so much to be dreaded in cases where the materials are combustible.

LIFE-ESTATES, in law, freehold estates not of inheritance.

LIFE-GUARDS, in military affairs, the body-guard of a sovereign prince.

THE HUMAN BODY IS A LITTLE LIGHTER THAN AN EQUAL BULK OF WATER, SO THAT IT NATURALLY FLOATS IN THIS FLUID.

SAVE A SAIL OF THE ROYAL NAVY, IT IS PUNISHED AS IF HE HAD CUT OFF THE KING'S HAND.



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ANIMALS, AS WELL AS PLANTS, REQUIRE THE PRESENCE OF THE RAYS OF THE SUN TO GIVE THEM THEIR DISTINCTIVE COLOURS.

**LIG'AMENTS**, in anatomy, elastic substances in an animal body, softer than cartilages and harder than membranes, which serve to strengthen the juncture, particularly of the bones. They are divided generally into *capsular* ligaments, which surround the joints like a bag, and *connecting* ligaments.

**LIG'ATURE**, in surgery, a chord, band, or string, of various thickness, covered with white wax, for the purpose of tying arteries, veins or other parts.——In music, a band or line connecting notes.——*Ligatures*, in mathematics, compendious notes, or characters by which are represented the sums, differences, or rectangles of different quantities.

**LIGHT**, in physics, that ethereal agent or matter, of the presence of which we are informed by the sensibility of the visual organs. By depicting an image of external objects on the retina of the eye, it announces to animals the presence of the bodies which surround them, and enables them to distinguish these bodies into transparent, opaque, and coloured. These properties are so essentially connected with the presence of light, that bodies lose them in the dark, and become undistinguishable. Light is universally expanded through space. It exerts peculiar actions, and is obedient to the laws of attraction, and other properties of matter. It is consequently an object of research, both in optics and in chemistry; the first inquires into its form and laws; the second, its essence. Light, according to the Newtonian doctrine, which no subsequent discovery or theory seems to have discredited, is composed of inconceivably small particles of matter, of different magnitudes; which are emitted or reflected from every point in the surface of a luminous body, in right lines, and in all directions, with an unparalleled velocity; and whose power or intensity decreases as the squares of the distance increase. That light is a material substance, appears from its being propagated in time, and from its acting upon and producing great alterations in other bodies; but that its particles are inconceivably small appears from this, that the greatest quantity of flame is found to have scarce any sensible gravity or weight: also, because these particles pervade the pores of all transparent bodies, however hard or heavy: yet, small as they are, the rays of light consist of different sorts of these particles. That the particles of light have not only magnitude, but also in different degrees, is one great discovery of the Newtonian philosophy. This is absolutely proved by the different refrangibility they are found to display in passing through a prismatic figure of glass or water; for the power of the prism detains the issuing particle, and draws it a little towards the surface; and, since this power is the same, it would have the same effect on all the particles of light, if they were all of an equal magnitude, because they have all an equal velocity. But since this effect is different among the particles, some being detained and drawn aside to a greater distance than others, it follows, they must be less in magnitude, to become more subject to the influence of the attracting surface; in like manner as the electric effluvia will act upon and agitate very small and light bodies much sooner, and more easily, than they can move those which are larger. The velocity of light exceeds that of a cannon-ball by one million five hundred and fifty thousand times. It is calculated to travel from the sun to the earth in eight minutes and thirteen seconds.——*Light, in chemistry.* Light is considered by modern chemists, as a simple elementary body; but they have not yet been able to form a theory on this subject, in which considerable difficulties are not involved. Light manifests itself to the mind through the mediums of two senses. To the organs of vision it presents forms and colours; and to those of touch, the phenomenon of heat. It is observable, that experience so uniformly teaches us to unite the ideas of light and heat, that none but the philosopher, and he scarcely with intelligibility, would talk of *fire* that is not *luminous*, or *light* that is not *warm*: the first step, therefore, towards an analytical examination of this matter, is to separate in our minds, the *warmth* and the *light* of our hearths. To assist this attempt, we must remember that fire certainly can exist, without the company of light, since both coals and iron may frequently be met with in a state of perfect blackness, combined with violent heat.—— It has long been known that the solar light is capable of producing powerful chemical changes. One of the most striking instances of it is its power of darkening the white chloride of silver, an effect which takes place slowly in the diffused light of day, but in the course of two or three minutes by exposure to the sunbeam.——In order to facilitate the doctrine of light, an explanation of the following terms made use of by philosophers are given:—A *ray of light* is an exceedingly small portion of light as it comes from a luminous body. A *medium* is a body which affords a passage for the rays of light. A *beam of light* is a body of parallel rays. A *pencil of rays* is a body of diverging or converging rays. *Converging* rays are rays which tend to a common point. *Diverging* rays are those which come from a point, and continually separate as they proceed. The rays of light are *parallel*, where the lines which they describe are so. The *radiant point* is the point from which diverging rays proceed. The *focus* is the point to which the converging rays are directed.——*Effects of light on vegetables.* We have elsewhere remarked that most of the discous flowers follow the sun in his course; that they attend him to his evening retreat, and meet his rising lustre in the morning with the same unerring law. It is also well-known that the change of position in the leaves of plants, at different periods of the day, is entirely owing to the agency of light, and that plants which grow in windows in the inside of houses, are, as

PLANTS DEPRIVED OF LIGHT BECOME WHITE, AND CONTAIN AN EXCESS OF SACCHARINE AND AQUEOUS PARTICLES.



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THE SAFEST SITUATION IN THE OPEN AIR, DURING A THUNDER-STORM, IS WITHIN A FEW YARDS OF TREES, BUT NOT UNDER THEM.

it were, solicitous to turn their leaves towards the light. The term *etiolation* has been given to this phenomenon, and the plants, in which it takes place, are said to be *etiolated* or *blanched*. In short, the more plants are exposed to the light, the *more colour* they acquire. Sir Humphry Davy found, by experiment, that red rose-trees carefully excluded from the light, produce roses almost white. He likewise ascertained that this flower owes its colour to light entering into its composition; that pink, orange, and yellow flowers imbibe a smaller portion of light than red ones; and that white flowers contain no light. But vegetables are not only indebted to the light for their colour: taste and odour are likewise derived from the same source. It moreover contributes greatly to the maturity of fruits. This seems to be the cause why in tropical climates, fruits and vegetables are in general more odoriferous, of a stronger flavour, and abound more with aromatic resins. The same kind of influence extends to the *animal* creation. Mankind, birds, beasts, fishes, and insects, all are, more or less, dependent on light for their beauty and vigour.

LIGHTHOUSE, a tower or lofty building on the sea-coast, intended to direct seamen in navigating ships at night, and consisting of an intense body of light, radiated by concave reflectors and convex lenses, sometimes coloured for distinction's sake, and made to change and revolve as a further means of distinction. To understand the importance of lighthouses, it may be proper to state, that the number of British vessels shipwrecked annually is about 550, or *one and a half per day*. The average burden per ship of the mercantile navy is about 110 tons: and, if we value old and new together at half the price of building, or 5*l*. 10s. per ton, we have 600*l*. for the value of each, and 330,000*l*. for that of the whole; which may be reduced to 300,000*l*. by deducting the value of sails, masts, and other materials, saved from some of those stranded. If we add an equal sum for the value of the cargoes, the whole loss from shipwrecks will be 600,000*l*. per annum. This statement proceeds on an old estimate from 1793 to 1829; but Mr. M'Culloch says, in the Supplement to his Dictionary, that the number of ships lost, or driven on shore, in 1833, was no less than 800. It is probable, then, that the annual loss by shipwreck is not much short of a million sterling. If one-fifth part of this loss could be prevented by additional lighthouses, the saving in money would amount to a million in five years, to say nothing of the still more important saving in human life.——The following particulars respecting the construction of *Metallic Lighthouses*, as proposed by Capt. S. Brown, may be deemed, in a national point of view, both important and interesting:—"It has been proposed to place a lighthouse on the Wolf Rock, near Land's End, a position where it would be exposed to the most violent storms of the Atlantic; and a plan was drawn up for the purpose by Mr. Stevenson, who holds a high rank in this department of engineering; which plan, Mr. Brown thinks, would require fifteen years for its execution, and cost 150,000*l*. Mr. Brown undertakes to erect one of bronze, 90 feet high, which would answer the purpose as well as the stone one of 134 feet, for 15,000*l*., and to complete it in four months. Mr. Brown's proposed metallic lighthouse is 14 feet in diameter at the bottom, and 4 feet at the thinnest part. The lower half, called the base, is in four pieces, each piece consisting of a portion of a hollow cone or parabaloid, wider below than above, and about 10 feet high; the lower piece is sunk 3 feet into the rock, and is 14 feet in diameter at its under margin; the fourth piece is 6 feet in diameter at top. These four pieces fit into each other, the neck of the lower passing into the socket of the upper, and both being secured by flanges; so that the joints are, in some degree, stronger than the entire part of the shaft. Above these is the smaller part of the shaft, which is in three pieces of nearly the same length, and fitted in the same manner. Above this, the shaft widens out into an inverted cone, which forms one piece, and supports the more important parts. These are, first, the keeper's house, which is 8 feet in diameter, and 7 feet high, with a gallery round it, 'for look-out and walking exercise.' Next, the lantern, 9 feet wide and 10 feet high to the cupola for containing the lights. The house, or sitting-room, is made of two concentric cylinders of sheet copper, 9 inches asunder, to equalize the temperature, and attached to each other by rivets: it is formed into compartments for bookcases, shelves, and lockers, with a recess for the back of the stove. Immediately below the house, in the swell of the shaft, are the sleeping-berths. To complete the description of the column, we shall add, that the upper section of the base contains two tanks, one for oil, and one for fresh water; the next section, above, is for coals and provisions: and the one above that, a general store. Access is obtained from below by the chain ladder reaching down to the sea; and by ladders in the inside, by which the keepers mount to their aerial abode. The whole work, 90 feet high, would cost 16,000*l*. or 17,000*l*., if entirely of bronze; 11,300*l*., if the base were bronze and the upper part cast iron; or 9,000*l*. if entirely of cast iron; and it would be erected in four months."

LIGHTNING, in meteorology, a flash of light suddenly appearing in the atmosphere, and commonly disappearing in the same instant; sometimes attended with clouds and thunder, and sometimes not. Lightning is proved, by the experiments of Franklin, to be produced by the electric fluid. Thunder is the explosion of clouds charged with that fluid: and lightning is to thunder, what the *flash* is to the *report* of gunpowder. A very remarkable property of lightning, the zigzag kind especially, when near, is its seeming omnipresence. If, when a clap of thunder, accompanied with this species of lightning, occurs, two

THE MIDDLE OF THE ROOM IS SAFEST IN A THUNDER-STORM, BECAUSE THE LIGHTNING USUALLY TAKES ITS DIRECTION ALONG THE WALLS.



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QUICK LIME BECOMES HEATED IN CONSEQUENCE OF THE VIOLENCE OF THE CHEMICAL ACTION, AND THE SOLIDIFICATION OF THE WATER.

persons are looking different ways, both will perceive the flash; not only that indistinct illumination of the atmosphere which is occasioned by fire of any kind, but the form of the lightning itself, and every angle it makes in its course will be as distinctly seen by each, as if they had looked directly at the cloud whence it proceeded: and if a person were at that moment looking at a book, or any other object, that he held in his hand, he also would distinctly see the form of the lightning between his eyes and the objects. This property seems peculiar to lightning. The different forms of the flashes of lightning are all equally found in electric sparks; so that an account of the origin of this difference of form may, by analogy, be drawn. Where the quantity of electricity is small, and, consequently, incapable of striking at any considerable distance, the spark appears straight, without any curvature, or angular appearance; but where the electricity is very strong, and, of consequence, capable of striking an object at a pretty considerable distance, it assumes a crooked or zigzag form.

LIG'NUM VITÆ, or GUAIACUM, in botany, a large tree, rising at its full growth to the height of forty feet, and measuring from fifteen to eighteen inches in diameter; having a hard, brittle, brownish bark, not very thick. The wood is firm, solid, ponderous, very resinous, of a blackish yellow colour and a hot aromatic taste. It is imported into England in large pieces of four or five hundred weight each, and, from its hardness and beauty, is in great demand for various articles of turnery ware, and for trucks of ship's blocks. The wood, gum, bark, fruit, and even the flowers possess certain medicinal virtues.

LIG'NITE, in geology, one of the most recent formations, being the carbonaceous remains of forest trees. From the lignite found in the neighbourhood of Cologne, the brown colours, *umber* and *earth of Cologne* are prepared.

LIGUSTRUM, in botany, *Privet*, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. The species are shrubs.

LIG'ULATE, or LIG'ULATED, in botany, an epithet for a kind of compound flowers, the florets of which have their corollets flat, spreading out towards the end, with the base only tubular.

LIG'URITE, a mineral occurring in oblique-rhombic prisms, of an apple-green colour occasionally speckled.

LILA'CEOUS, in botany an epithet for plants that belong to the lily tribe, or bear a resemblance to them.

LI'LAC, a beautiful plant or shrub, of the genus *Syringa*, bearing flowers disposed in large pyramidal racemes, and of a bluish or light purple colour. The corolla is funnel-shaped, and divided into four segments; and the flowers have an agreeable fragrance.

LIL'ALITE, a species of argillaceous earth.

LIL'Y, in botany, a magnificent genus of plants, with a bulbous and perennial root, the flower of which is six petalled and campanulated. There are many kinds, of great beauty, and of various colours. The lily is reckoned by Pliny the noblest flower next to a rose; and, according to Dioscorides, it was a royal flower. It is celebrated by the poets for its short-lived beauty.——*Lily of the valley*, a plant of the genus *Convallaria*, with a monopetalous, bell-shaped corolla.

LIMB, in anatomy, a jointed or articulated part of an animal body; as the arm or leg.——In astronomy, the utmost edge or border of the body of the sun or moon.——In mathematics, the utmost edge or border of an instrument.——In botany, the border or upper spreading part of a monopetalous corolla.

LIME, *(calx)* in mineralogy, a very useful earth, found in great abundance in nature, though never in an uncombined state. It absorbs moisture and carbonic acid, and exists as limestone, and in marble and chalk, which, when burnt, become lime. It consists of oxygen, and a metallic base called calcium. It is the basis of the bones, shells, and other hard parts of animals. It fixes the gaseous constituents of water, which in losing their motion, transfer it in great heat to surrounding bodies. In its native state it is called *carbonate of lime*, and burnt to disengage the carbonic acid. When made into a paste of one part water and three parts lime, it is called *hydrate of lime*, and being mixed with silica, alumina, and oxyde of iron, it forms plastic cements and mortars. Its combination with sulphuric acid is known by the name of *gypsum*, or *sulphate of lime:* combined with fluoric acid it constitutes fluate of lime, or *Derbyshire spar*. Lime is much used by tanners, skinners, &c., in the preparation of their leather; by soap-boilers, for dissolving the oil, and facilitating its union with the alkaline salt; and by sugar-bakers, for refining their sugar. ——*Lime water* is used for medicinal purposes; being given internally in spasms, diarrhœa, convulsions of children, &c., and externally applied to burns and ulcers.

LIME, a fruit like a small lemon, the juice of which is a very strong acid, and very much used in the making of punch.

LIM'IT, in mathematics, a determinate quantity, to which a variable one continually approaches.

LIMITATION, in law, a certain time prescribed by statute, within which an action must be brought.

LIM'PET, the *Patella* of Linnæus, a testaceous animal, commonly found adhering to oysters. The shell is sub-conic, and its inhabitant a kind of slug.

LIN'DEN TREE, in botany, the Lime-tree, of the genus *Tilia;* distinguished for bearing sweet flowers and an acid fruit.

LINE, in geometry, a quantity extended in length, without breadth or thickness. Lines are either curves or right lines.——In fortification, whatever is drawn on the ground of the field, as a trench, or a row of gabions, &c.——*Lines* are most commonly made to shut up an avenue, or entrance to some place, and are distinguished into *lines of approach*, of *defence*, of *communica-*

THE CRUST FREQUENTLY SEEN ON THE INSIDES OF KETTLES AND BOILERS IS OCCASIONED BY THE CARBONATE OF LIME IN HARD WATER.



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LINEN WORN NEXT THE SKIN RESISTS THE PERSPIRATION, BECOMES IMBUED WITH IT, AND IMPARTS A SENSATION OF COLDNESS.

*tion*, &c.——*Line*, in genealogy, a series or succession of relations, from a common progenitor. *Direct* line, is that which goes from father to son; being the order of ascendants and descendants. The *Collateral* line, is the order of those who descend from a common father related to the former, but out of the line of ascendants and descendants: in this are placed uncles, aunts, cousins, nephews, &c.——*A ship of the line*, in naval affairs, any vessel of war large enough to be drawn up in the line of battle. ——In military affairs, regular troops, in distinction from the militia, volunteers, &c., are called troops of *the line*.—*Meridian line*, in geography, an imaginary line drawn through the two poles of the earth and any part of its surface.

LIN'EAR, in botany, an epithet for a leaf like a line, or of the same breadth throughout, except at the extremities.——*Linear numbers*, in mathematics, such as have relation to length only; such is a number which represents one side of a plane figure. If the plane figure be a square, the linear number is called a root.

LIN'EATE, in botany, an epithet for a leaf marked longitudinally with depressed parallel lines.

LIN'EN, cloth made of flax, being much finer than that which is made of hemp. In common linen the warp and woof cross each other at right angles; if figures are woven in, it is called *damask*. The species of goods which come under the denomination of linen, are table-cloths, sheeting, cambric, lawn, shirting, towels, &c. The chief countries in which linens are manufactured are Russia, Germany, Switzerland, Holland, Scotland, and Ireland. In several parts of Germany, Switzerland, Flanders, and France, linens are frequently embellished with painting; and in England the produce of the Irish linen manufacture is beautifully printed in the manner of calicoes.——In the middle ages, linen and woollen cloth formed the only materials for dress; and fine linen was held in very high estimation. In more ancient times linen formed the dress of the Egyptian priests, who wore it at all their religious ceremonies.

LING, in ichthyology, the *Gadus molva* of Linnæus, a sort of cod-fish which inhabits the northern seas. The ling deposits its spawn in June, and is in perfection from February to May. It is salted in great quantities, both for exportation and home consumption.

LINGUA'LIS, in anatomy, the name of a muscle which is said to pass from the root of the *os hyoides*, to the top of the tongue.

LIN'IMENT, in medicine, an oily substance, of a middle consistence, between an ointment and oil, but so thin as to drop.

LINNÆAN SYSTEM, a scientific arrangement of all natural objects, as animals, plants, and minerals, into three kingdoms, subdivided into classes, orders, genera, species, and varieties, with a description of their generic and specific characters. It received this appellation from Charles Linné (latinized Linnæus), the celebrated Swedish naturalist. [See a sketch of the life of Linnæus, in the "*Biographical Treasury*."]

LIN'NET, in ornithology, the *Fringilla linota*, a small singing bird of the finch kind, of a brown colour.

LIN'SEED, the seed of the flax-plant, which yields much oil by pressure, and when purified forms excellent lamp-oil, and abundance of carburetted hydrogen gas for gas lights. It is also much used in medicine, its qualities being mucilaginous, lubricating, and emollient.

LIN'SEY WOOL'SEY, cloth made of linen and woollen mixed together.

LINT, in surgery, linen scraped into a soft, woolly substance, fit for applying to wounds, either simply, or covered with unctuous substances.

LIN'TEL, in architecture, a piece of timber that lies horizontally over door-posts and window-jambs.

LI'NUM, or FLAX, in botany, a genus of plants, class 5 *Pentandria*, order 5 *Pentagynia*.——The *linum usitatissimum*, or common flax, is the species of *linum* cultivated for manufactures and medicine. Its stems are about two feet and a half high, garnished with narrow spear-shaped, alternate grey-coloured leaves, and divided at their top into peduncles, or foot-stalks, terminated by small, blue, bell-shaped flowers, appearing in June and July, and succeeded by large round capsules, each containing one seed. [See Flax.]

LI'ON *(leo)*, in zoology, a quadruped of the genus *Felis*, strong, fierce, and rapacious; sometimes called the king of beasts for his combined activity, strength, and majesty of deportment. Lions are now found only in unfrequented parts of Asia and Africa. They measure about eight feet from the nose to the rump, with a tail about four feet; the colour being a pale brown, or tawny yellow, and the male having a bushy mane, which the lioness is without. Their muscular strength is prodigious, and their roar and assault terrible; but, when brought up tame, and unused to attack and defence, they allow their keepers to play with them, and are often kind to small animals placed in their dens. From time immemorial, praises have been bestowed on this animal for grateful affection, dauntless courage and merciful forbearance, but modern naturalists have not scrupled to deny him all these excellent qualities. Mr. Burchell, the African traveller, says, "when men first adopted the lion as an emblem of courage, it would seem that they regarded great size and strength as indicating it; but they were greatly mistaken in the character they have given to this indolent, skulking animal, and have overlooked a much better example of true courage, and other virtues also, in the bold and faithful dog." The lioness brings forth from three to four cubs at a birth, which she suckles for a year, at which time their colour is a mixture of reddish and gray, with a number of brown bands. The male attains maturity in seven, and the female in six years. The strength of the lion is

THE LINEN TRADE OF IRELAND HAS ALWAYS BEEN PROMOTED AND ENCOURAGED BY DIRECT LEGISLATIVE ENACTMENTS.



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such, that a single stroke with his paw is sufficient to destroy most animals. He generally lurks near a spring, or by the side of a river, where he has an opportunity of surprising such animals as resort to the water to quench their thirst. Here he lies in wait, crouched in some thicket, till his prey approaches, and then, with a prodigious leap, seizes it at the first bound. At night he generally prowls abroad in search of his prey, the conformation of his eyes being, like those of the common cat, well fitted for seeing in a dim light. His roar is loud and terrific, especially when heard in the solitary wilds he inhabits; and when enraged, his cry is still more appalling than his roar. When irritated, he lashes his sides with his tail, in order to excite himself by a prickle or spur which is concealed in the tuft of long black hairs at the end of it. This circumstance is noticed by Homer, and Blumenbach some years since verified the existence of the prickle; but the fact was unnoticed by naturalists, till very recently, when it was further corroborated on the death of two lions in the Menagerie Royal at Paris.

LI'ONCEL, in heraldry, a small lion, the name by which lions are said to be blazoned when there are several in one escutcheon.

LIP'OGRAM, a writing in which a single letter is wholly omitted.

LIQUEFACTION, in chemistry, the conversion of a solid into a liquid by the sole agency of heat or caloric.

LIQUEUR *(French)*, a name for various palatable spirituous drinks, in which some aromatic infusion generally predominates and gives to it a name. Some are simple *liqueurs*, as *noyau*, anise-water, &c. Others have more saccharine and spirituous matter, as the *aniselte*, *curaçoa*, &c. And a third kind are the creams, or superfine liqueurs, such as *rosoglio*, *maraschino*, &c.

LIQUID. Fluids have been divided into two classes, viz. those which are elastic, and the non-elastic, or those which do not sensibly diminish in bulk when subjected to pressure. The first class are airs or gases: the second liquids: hence we may define a liquid to be a fluid not sensibly elastic, the parts of which yield to the smallest pressure, and move on each other.——In grammar, a letter which has a smooth flowing sound, or which flows smoothly after a mute; as *l* and *r*, in *bla*, *bra*. *M* and *n*, and *s*, are also *liquids*.

LIST, a roll or catalogue, as the monthly *army list*, the *navy* list, &c.——*Lists*, in archæology, the enclosed ground wherein knights held their jousts and tournaments. Hence, *to enter the lists* is to engage in contest.

LIT'ANY, a solemn form of supplication to God, in which the priest utters some things fit to be prayed for, and the people join in their intercession, saying, *we beseech thee to hear us, good Lord*, &c. Originally, the litany was a distinct service by itself, and used some time after the morning prayer was over; at present it is made one office with the morning service, being ordered to be read after the third collect for grace, instead of the intercessional prayers in the daily service.

LITERA'TI, in general, denotes men of learning.——In antiquity, those who were branded with any letters by way of ignominy, were so called.

LIT'ERATES, in ecclesiastical affairs, a name given to those who are admitted to ordination by the bishop without having taken a university degree.

LIT'ERATURE, in a general sense, comprehends such an acquaintance with letters or books as may impart to the student a knowledge of the classic authors, history, grammar, rhetoric, logic, &c. as well as the sciences. *Literature* and *literary* are in short applied to those branches of study which come within the scope of a general reader, rather than to works of mere erudition and abstract science.——In *literary history* the word has a more extensive meaning. Hence the phrase "literature of the middle ages" means the aggregate of works written during the middle ages; "medical literature," whatever of note that has been written on medicine, &c. In a more limited sense, *literary history* treats of learned writings, their contents, fate, translations, &c., which is *bibliography*; and of the lives of their authors, the circumstances under which they wrote, &c., forming a main branch of universal *biography*.

LITH'ARGE, in chemistry, an oxyde of lead, in an imperfect state of vitrification.

LITH'IA, a new alkali, found in a mineral called petalite, of which the basis is a metal called *lithium*.

LITH'IC ACID, in chemistry, an acid extracted from the urinary calculi, by digesting them in caustic lixivium.

LITH'OCALLA, a cement that unites stones.

LITH'OCARP, fruit petrified; fossil fruit.

LITH'OCHROMICS, the art or process of painting in oil upon stone, and of taking impressions on canvass: an ingenious invention of a French artist. It was afterwards improved upon by Senefelder, the inventor of lithography.

LITHODEN'DRON, a name for coral, which is so called from its resembling a branch.

LITHOGEN'ESY, the doctrine or science of the origin of minerals composing the globe, and of the causes which have produced them.

LITHOGLYPH'ITE, a fossil that presents the appearance of being engraved or shaped by art.

LITHOG'RAPHY, the art of engraving on stone, and taking impressions therefrom on paper by means of ink and a rolling-press: an art invented by Mr. Senefelder, of Munich, in Bavaria, and now brought to great perfection in France, England, &c. The process is as follows:—The writing, or design, is drawn on stone with a greasy composition formed of tallow, bees'-wax, shell-lac, and common soap, which will not unite with, or be affected by water: pre-



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ALL KINDS OF ANIMALS ARE PROVIDED, BY NATURE, WITH ORGANS OF LOCOMOTION BEST ADAPTED TO THEIR STRUCTURE AND SITUATION.

vernments on the pledge of certain taxes to pay the interest. This is called a *public loan*. The practice of borrowing money to defray the extraordinary expenses in time of war, which has been adopted in Great Britain during several of our late wars, has given rise to the national debt. Where there is a well-founded system of credit, statesmen think it most advantageous to secure only the regular payment of the stipulated interest, but to leave the payment of the capital at the pleasure of the state; and this is called the *funding system*.

LOBE, in anatomy, any fleshy protuberant part, as the lobes of the lungs, lobes of the ears, &c.——In botany, a division in seeds, such as beans, peas, &c.——*Lobed*, or *Lobate*, signifies divided to the middle into parts distant from each other, with convex margins.

LOBE'LIA, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. They are distinguished by the labiate corolla, and by having the five stamens united in the form of a cylinder, as in the *compositæ*. They are all herbaceous or frutescent, having alternate leaves, and flowers disposed in terminal racemes.

LOB'STER, in ichthyology, a crustaceous or shelly fish of the genus *Cancer*, constituting an article of food. They have large claws and fangs, and four pair of legs. They are said to change their shell annually; and, like all other crustaceous animals, they only increase in size whilst in a soft state. At the sound of thunder, or the firing of cannon, it is asserted that they often lose their claws; and this extraordinary fact appears to be well authenticated: it is also well known that in their combats with each other, the vanquished party generally leaves one of his limbs in his adversary's grasp. Lobsters are extremely prolific; and the eggs are deposited by the female in the sand, where they are soon hatched.

LO'CAL, pertaining to a fixed or limited portion of space.——*Local colours*, in painting, such as are natural and proper for each object in a picture.——*Local medicines*, those destined to act upon particular parts.——*Local actions*, in law, such as must be brought in a particular county, where the cause arises——*Local problem*, in mathematics, that which admits of innumerable solutions.——*Local militia*, a temporary armed force, embodied for the defence of the country, and exercised within certain limits.

LOCA'LES, in medicine, the fourth class in Cullen's Nosology, which comprehends partial morbid affections, and includes eight orders.

LOCHIA, in medicine, evacuations which follow child-birth.

LOCK, in mechanics, a piece of ironwork, requiring much art and nicety in contriving and varying the springs, bolts, and different parts to the uses for which they are intended. Locks are of various forms, but the principle on which they all depend is the application of a lever (the key) to an interior bolt, by means of a communication from without; and the security of locks depends upon the impediments (termed *wards*) which may be interposed betwixt this lever and the bolt. Those who have examined the construction of Bramah's, Taylor's, Chubb's, and other patent locks, must be convinced that the security of them is equal to the ingenuity of their inventors. In a very ingenious lock, invented by Mr. Perkins, 24 small blocks of metal, of different sizes, are introduced, corresponding to the letters of the alphabet. Out of these, an indefinite number of combinations can be made. The person locking the door selects and places the blocks necessary to spell a particular word, known only to himself, and no other person, even in possession of the key, can open the door without a knowledge of the same word. Locks are known to have been of great antiquity, because sculptures of locks similar to those now used in Egypt, have been discovered on the great temple of Karnac, whence Denon infers locks were known in Egypt about four thousand years since. A lock resembling the Egyptian is used in Cornwall, and the same has been seen in the Faro Islands; to both which places it was probably taken by the Phœnicians.——*Lock*, the barrier or works of a canal, which confine the water, where the change of level takes place, furnished with gates at each end, which separate the higher from the lower parts of the canal. When a boat passes up the canal, the lower gates are opened, and the boat glides into the lock, after which the gates are shut. A sluice, communicating with the upper part of the canal, is then opened, and the lock rapidly fills with water, elevating the boat on its surface. When the lock is filled to the highest water-level, the upper gates are opened, and the boat, being now on the level of the upper part of the canal, passes on its way. The reverse of this process is performed when the boat is descending the canal.—The amount of elevation and descent made by the locks of a canal, is termed the *lockage*.

LOCOMOTION, the art or power of moving from place to place. The chief obstacles which oppose locomotion, or change of place, are gravity and friction, the last of which is, in most cases, a consequence of the first; and most kinds of mechanism which are intended to assist locomotion, are arrangements for obviating the effects of gravity and friction. For moving weights over the common ground with its ordinary asperities and inequalities of substance and structure, no piece of inert mechanism is so favourably adapted as the wheel carriage; and whatever tends to diminish the friction, and also to surmount obstacles or inequalities on a road, must naturally be a desideratum in locomotion. For this express object a patent was taken out in 1836, by Mr. Ashdowne, for certain apparatus to be applied to the wheels of carriages, by which a flat chain or series of links presented a level surface for the wheels to run on, form-

COMMON DOOR-LOCKS ARE NOW USUALLY INSERTED IN THE WOOD, INSTEAD OF BEING SCREWED ON, AND WHEN SO PLACED ARE CALLED "MORTISE LOCKS."



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ing what was not inaptly called a "portable railway." The death of the inventor interfered with the prosecution of this ingenious plan, but we hear that it is yet likely to be rendered not only practicable, but available to a considerable extent on ordinary roads. —While on this subject we ought to add, that great mechanical skill has been employed, by several ingenious engineers, in the construction of *locomotive steam engines* for moving on common roads; and, though none have yet perfectly succeeded, when we consider the rapid improvements which are making in the various departments of machinery, it is highly probable that carriages of this description will eventually be made to ply on our turnpike roads. [See RAILWAYS, STEAM-ENGINE, &c.]

LOC'ULAMENT, in botany, the cell of a pericarp in which the seed is lodged. Thus we say of a pericarp, it is *unilocular, bilocular*, &c.

LO'CUM TE'NENS, a deputy or substitute; one who supplies the place of another, or executes his office.

LO'CUS, in mathematics, the name of a line by which a local or indeterminate problem is solved. *Loci* are expressed by algebraic equations of different orders, according to the nature of the locus.

LOCUS IN QUO, in law, the place where anything is alleged to be done in pleadings, &c.——*Locus partitus*, a division made between two towns or counties, to make trial where the land or place in question lies.

LO'CUST, in entomology, a voracious insect of the genus *Gryllus*, somewhat resembling the common grasshopper. These insects are at times so numerous in Africa and the south of Asia, that they do immense injury to vegetation, literally devouring everything green; and when they migrate they fly in clouds, darkening the air by their numbers. Happily for mankind, this calamity is not frequently repeated, for it is the inevitable precursor of famine and its horrible consequences. Even when dead they are still productive of evil consequences, since the putrefaction which arises from their inconceivable number is so great, that it is justly regarded as one of those desolating pestilences which almost depopulate whole districts of country. Sometimes, though not often, they appear in Europe, and produce the same effects. In the year 591, an army of unusually large locusts ravaged Italy, and being at last cast into the sea (as seems for the most part to be their fate), a pestilence, it is alleged, arose from their stench, which carried off nearly a million of men and beasts. In the Venetian territory, likewise, in 1478, more than 30,000 persons are said to have perished in a famine chiefly occasioned by the depredations of locusts. In Barrow's Travels it is stated, that in Southern Africa the whole surface of the ground might literally be said to be covered with them for an area of 2000 square miles. The water of a very wide river was scarcely visible on account of the dead carcasses that floated on the surface. The larvæ are much more voracious than the perfect insects; and when they are on a march during the day, it is utterly impossible to turn the direction of the troop, which is generally with the wind. It scarcely admits a doubt that these insects are the locusts so accurately described in the Bible. Thus, in Joel ii. 2, &c. "A fire devoureth before them, and behind them a flame burneth: the land is as the garden of Eden before them, and behind them a desolate wilderness; yea, and nothing shall escape them. The sound of their wings is as the sound of chariots, of many horses running to battle; on the tops of the mountains shall they leap, like the noise of a flame of fire that devoureth stubble, as a strong people set in battle array. Before their faces the people shall be much pained; all faces shall gather blackness. They shall run like mighty men: they shall climb the wall like men of war; and they shall march every one in his ways, and they shall not break their ranks; neither shall one thrust another."—Much controversy has arisen on "locusts and wild honey," the food of John the Baptist, in the wilderness, because the commentators have interpreted the former as the fruit of the cassia-fistula, or locust-tree. Dr. Clarke, the traveller, was one of the first to propagate this misconception. There is, however, no doubt of the insects being the food, since Hasselquist mentions locusts being eaten by the Arabs, so that probably this dish was used in the time of St. John. Mr. Forbes, the Oriental traveller, corroborates this account, and adds, "The wild honey is found in the clefts of the rocks of Judea, as abundantly as in the caves of Hindustan." Nay, if we only refer to the book of Leviticus, chap. xi, v. 22, we shall find that locusts constituted a common food among the Jews, and that the different kinds which they were permitted to eat are there specified.

LO'CUST-TREE, in botany, a tree of the genus *Robinia*, distinguished no less for its valuable wood than for the beauty of its foliage and its fragrant white flowers. The leaves are pinnate, and the leaflets very thin and smooth. The wood is compact, hard, capable of receiving a fine polish, and has the property of resisting decay longer than almost any other. It grows very rapidly in the south-western states of America, sometimes reaching to the height of eighty feet; and it is cultivated in Europe for its useful properties as well as for ornament.

LODE, among miners, a metallic vein, or any regular vein or course, whether metallic or not.

LODG'ED, in heraldry, a term for a buck, hart, &c. when lying on the ground; answering to *couchant*, which is applied to a lion or other beast of prey.

LODG'MENT, in military affairs, is a work raised with earth, gabions, fascines, &c. to cover the besiegers from the enemy's fire, and to prevent their losing a place which they have gained, and are resolved, if possible, to keep.

LOG, in navigation, a piece of board,



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forming the quadrant of a circle, which is thrown over a ship's side, and surrendered to the free action of the water, to measure either the current, or the ship's rate of sailing.——*Log-line*, the line fastened to the log, which is divided into certain spaces fifty feet in length, by knots or pieces of knotted twine, unreeved between the strands of the line, which show, by means of a half-minute glass, how many of these spaces or knots are run out in half a minute; and as the distance of the knots bears the same proportion to a mile that half a minute does to an hour, whatever number of knots the ship runs in half a minute, the same number of miles she runs in an hour. ——*Log-board*, two boards, shutting like a book, and divided into columns containing the hours of the day and night, direction of the wind, course of the ship, &c., on which an account of the ship's way is marked.—— *Log-book*, the book in which the contents of the log-board are transcribed.——*Log-reel*, a reel in the gallery of a ship, on which the log-line is wound.

LOGARITH'MIC, or LOGIS'TIC, an epithet for a curve, so called from its properties and uses in explaining and constructing logarithms, because its ordinates are in geometrical progression.

LOG'ARITHMS, the exponents of a series of powers and roots. When the logarithms form a series of numbers in arithmetical progression, the corresponding natural numbers form a series in geometrical progression, so that the sum of one is the multiple of the other. Thus,

*Ar. Pr.* 0, 1, 2, 3, 4, 5, 6, &c.

*Geo. Pr.* 1, 2, 4, 8, 16, 32, 64, &c.

So that if 1 and 3 be added together, 4 corresponds with 16, which is the same as the multiple of 2 and 8, which stand under the 1 and 3. The upper line, therefore, are the logarithms of the lower, and logarithmic tables furnish the intermediate fractions corresponding with the intermediate numbers in the lower line, in the same proportions. A table of logarithms made according to an assumed basis or fundamental ratio, of all numbers, to a certain limit, is called a *logarithmic system*. The most common is that of Briggs, in which the fundamental basis is 10 to 1; hence 1 is the logarithm of 10, 2 of 100, 3 of 1000, 4 of 10,000, &c. The use of logarithms in trigonometry was discovered by John Napier, a Scottish baron, and made known by him in a work published at Edinburgh in 1614. Logarithmic tables are of great value, not only in trigonometry, astronomy, &c., but to all who have to make calculations with large numbers.

LO'GIC, a science that includes the laws of thought and the art of reasoning; its purpose being to direct the intellectual powers in the investigation of truth, and in the communication of it to others.

LOGIS'TÆ, in antiquity, Athenian magistrates, ten in number, whose office it was to receive and pass the accounts of magistrates when they went out of office.

LOGOG'RAPHY, a method of printing, in which the types form whole words instead of letters. By this method the business would seem to proceed with more expedition and less liability to err. It has been used to a certain extent, but the plan never came into general use, and it has long since been abandoned altogether, from an idea that more time was lost than gained by the operation.

LOG'OGRIPH, a kind of riddle, which consists in some allusion or mutilation of words, being of a middle nature between an enigma and a rebus.

LOG'WOOD, an important article of commerce, much used in the arts, is derived from a low, crooked, prickly tree, found in great plenty at Campeachy, in the bay of Honduras, and is denominated "hæmatoxylon campechianum." Logwood is very dense and firm in its texture, exceedingly heavy, so as to sink in the water, of a deep red colour, and admits of a fine polish. It yields its colour both to spirituous and watery menstrua, but alcohol extracts it more readily than water. Acids turn its dye to a yellow, alkalies deepen its colour, and give it a purple or violet hue.

LOINS, in anatomy, the two lateral parts of the umbilical regions of the abdomen: or the space on each side of the vertebræ, between the lowest of the false ribs and the upper part of the haunch-bone: called also the *reins*.

LOL'LARDS, a sect of early reformers in Germany and England, the followers of Wickliffe. The name was at that time applied to them as one of infamy, the Romish church treating them as the vilest heretics.

LOM'BARDS, a name formerly given to bankers, because the people of Lombardy first followed this branch of commerce. Hence the name of *Lombard-street*, so long noted for its numerous banking-houses.

LOMENTA'CEÆ, in botany, the name of the thirty-third natural order in Linnæus's Fragments, consisting of plants, many of which furnish beautiful dyes, and the pericarp of which is always a pod containing seeds that are farinaceous, or mealy, like those of the bean; as the cassia, the wild senna, logwood, mimosa, or the sensitive plant, &c.——*Lomentum*, or *Loment*, an elongated pericarp, which never bursts.—— *Lomentaceous*, furnished with a loment.

LONGEV'ITY, length or duration of life, generally designating great length of life. Lord Bacon observes, that the succession of ages, and of the generation of men, seems no way to shorten the length of human life, since the age of man from the time of Moses to the present has stood at about eighty years, without gradually declining, as one might have expected; but doubtless there are times wherein men live to a longer or shorter age, in every country; and it has been remarked that those generally prove longest-lived who use a simple diet, and take most bodily exercise; and shortest-lived who indulge in luxury and ease; but these things have their changes and revolutions, whilst the succession of mankind holds on uninterrupted in its course. There are,



OF ALL THE COLOURS PREPARED FROM LOGWOOD, BLACK IS THE MOST DURABLE, AND SOME RECOMMEND IT AS AN INGREDIENT IN MAKING INK.

WHEN CHIPPED LOGWOOD HAS BEEN SOME TIME EXPOSED TO THE AIR, IT LOSES A CONSIDERABLE PORTION OF ITS DYING POWER.

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LU'CID IN'TERVAL, in medicine, an interval in which the phrenzy of mad persons ceases, and leaves them in possession of their senses.

LU'CIFER, the morning star; called, when an evening star, *Hesperus*. Astronomy teaches us, however, that the evening and morning star are one and the same, viz. the beautiful and bright planet Venus. The name of *Lucifer* is also given to the prince of darkness.

LUCIFE'RIANS, in ecclesiastical history, the followers of Lucifer, bishop of Cagliari, in the fourth century; a sect that held to the carnal nature of the soul, and that there is no place for repentance for such as fall.

LU'CULLITE, in mineralogy, a subspecies of carbonate of lime, of three kinds.

LU'DI, in antiquity, the shows or public exhibitions which were made among the Greeks and Romans, for the display of skill and the entertainment of the people. [See GAMES.]

LUFF, or *Keep your Luff!* in navigation, an order of the helmsman to put the tiller on the lee-side, in order to make the ship sail nearer the wind. A ship is said to *spring her luff*, when she yields to the helm by sailing nearer the wind.——*Luff round!* the order to throw the ship's head up in the wind.——*Luff tackle*, a large tackle not destined for any particular place in the ship, but movable at pleasure.

LUG'GER, a vessel carrying three masts, with a running bowsprit, upon which she sets lug-sails, and sometimes has top-sails adapted to them.——*Lug-sail*, a square sail bent upon a yard that hangs obliquely to the mast at one-third of its length.

LUKE, or *Gospel of St. Luke*, a canonical book of the New Testament, distinguished for fullness, accuracy, and traces of extensive information. Some think it was properly St. Paul's gospel, and when that apostle speaks of his gospel, he means what is called St. Luke's. Irenæus says, that St. Luke digested into writing what St. Paul preached to the gentiles; and Gregory Nazianzen tells us, that St. Luke wrote with the assistance of St. Paul.

LUMACHEL'LA, or LUM'ACHEL, in mineralogy, a calcareous stone composed of shells and coral conglutinated, but so far retaining their organization as to exhibit different colours, and so hard as to admit of polish.

LUMBA'GO, in medicine, a rheumatic affection of the muscles about the loins.

LUM'BAR RE'GION, in anatomy, the posterior portion of the body between the false ribs and the upper edge of the haunch bone.

LUM'BRICAL MUS'CLES, in anatomy, certain muscles of the fingers and toes, so named from their resembling a worm.

LUMBRI'CUS, a species of worm, of various lengths, which inhabits occasionally the human intestines.

LUMP FISH, in ichthyology, a thick fish of the genus *Cyclopterus*. The back is sharp and elevated; the belly flat, and of a crimson colour; and along the body run five rows of sharp bony tubercles. The lumpfish swims edgewise, and is enabled to adhere with great force to any substance to which it applies itself.

LU'NACY, a species of insanity or madness, supposed to be influenced by the moon, or by its position in its orbit.

LU'NAR CAUS'TIC, in chemistry, nitrate of silver fused in a low heat.

LU'NATIC, as defined by the law, is a person who is sometimes of a sound mind, and at other times not so; in which last case, he is said to be *non compos mentis*. A lunatic, while in this state, is not chargeable with any criminal act, except an attempt upon the person of the sovereign; and, therefore, where a person incites a lunatic to commit a criminal action, he is, in the eye of the law, a principal offender, and is punished in the same manner as if he committed it himself. But though a lunatic is not punishable, yet to prevent mischief, he may be confined in prison till he has recovered his senses.

LUNA'TION, in astronomy, the space of time between one new moon and another.

LUNE, or LU'NULE, in geometry, a plane in the form of a crescent or half moon, terminated by the circumference of two circles that intersect each other within.

LUNETTE, in fortification, an enveloped counterguard, or elevation of earth made beyond the second ditch; or a covered place before the curtain, consisting of two faces that form an angle inward.——In optics, *lunettes* are glasses to help the sight.

LUNGS *(Pulmones)*, in anatomy, two viscera situated in the chest, by means of which we breathe. The substance of the lungs is of four kinds, viz. vesicular, vascular, bronchial, and parenchymatous. The vesicular substance is composed of the air-cells: the vascular invests those cells like a network: the bronchial is formed by the ramifications of the bronchia throughout the lungs, having the air-cells at their extremities; and the spongy substance that connects these parts is termed the *parenchyma*. To the touch they are soft, spongy, and elastic; and in their specific gravity they are the lightest of all the organs.

LU'NISTICE, in astronomy, the farthest point of the moon's northing and southing, in its monthly revolutions.

LU'NULAR, or LU'NULATE, in botany, resembling a small crescent; shaped like the new moon.

LUPERCA'LIA, a festival of the ancient Romans in honour of the god Pan, observed on the 15th of the calends of March, and so called from *Luperci*, the priests of that deity. This festival was instituted by Evander, who being driven from Arcadia, and received by king Faunus, introduced the worship of Pan in Italy: but the ceremonies and magnificence of this feast were increased by Romulus.

LU'PINE, in botany, a genus of leguminous plants *(lupinus)*, mostly annuals, bearing digitate leaves, and papilionaceous

IF IT WAS FORMERLY ADJUDGED, THAT THE ISSUE OF AN IDIOT WAS LEGITIMATE, AND HIS MARRIAGE VALID; BUT IT IS NOW DETERMINED OTHERWISE.

IF, AFTER A PRISONER HE TRIED AND FOUND GUILTY, HE SHOULD LOSE HIS SENSES BEFORE JUDGMENT IS PRONOUNCED, NO SENTENCE IS PASSED ON HIM.



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flowers, which are usually disposed in a terminal raceme.

LU'PULIN, the fine yellow powder of hops. It has a penetrating aromatic odour, and when insulated, it is found to consist of little grains, which attach themselves to the fingers and render them rough.

LU'PUS, in astronomy, the Wolf, a constellation of the southern hemisphere.

LURCH'ER, a variety of the *Canis familiaris*, a dog more used by poachers than sportsmen, having a narrow body, stout legs, a straight tail, and long rough hair.

LUSTRATION, in antiquity a ceremony of purification which the Romans performed on their fields, armies, and people, on different occasions, but particularly after the numbering of the people by the censors every five years, or *lustrum*.

LUSTRE, a term very generally used in modern works on mineralogy. The lustre of minerals is of five kinds: 1. *splendent*, that is, when in full day-light, the lustre can be seen at a great distance; 2. *shining*, when at a distance the reflected light is weak; 3. *glistening*, when the lustre is only observable at no greater distance than an arm's length; 4. *glimmering*, when the surface held near the eye in full day-light presents a number of shining points; 5. *dull*, when the surface has no lustre.

LU'SUS NATU'RÆ, something out of the ordinary course of nature.

LUSTRUM, in Roman antiquity, a general muster and review of all the citizens and their goods, which was performed by the censors every fifth year, who afterwards made a solemn *lustration*. This custom was first instituted by Servius Tullius, about 180 years after the foundation of Rome. In course of time the *lustra* were not celebrated so often, for we find the fifth lustrum celebrated at Rome only in the 574th year of that city.

LUTE, a stringed instrument of music, containing at first only five rows of strings, to which were afterwards added six more. It was formerly much used. The strings are struck with the right hand, and with the left the stops are pressed.

LUTE, or LUTING, in chemistry, a composition or paste made of potter's clay, sand, and other materials, for the purpose of closing up the necks of retorts, receivers, &c. in different chemical experiments.

LUTHERANISM, the doctrines of Martin Luther, the German reformer, which form the creed of nearly all the Protestants in Germany. Luther was an Augustine friar, who separated from the church of Rome about the year 1515, and took the lead in what is now called the Reformation.

LUXATION, in surgery, the dislocation of a bone from its proper cavity, or articulation, so as to impede or destroy its proper motion or office.

LUXURY, an unrestrained indulgence in the pleasures of the table, in costly dress, equipage, &c. Amongst the Romans, luxury prevailed to such a degree, that several laws were made to suppress, or at least to limit it. Apicius laid aside ninety millions of sesterces, besides an enormous revenue, for no other purpose than to be sacrificed to luxury: finding himself involved in debt, he looked over his accounts, and though he had the sum of ten million of sesterces still left, he poisoned himself for fear of being starved to death. Instances might be produced of great luxury amongst the Greeks; but the extravagance and luxury of both Greeks and Romans appear to be eclipsed by some of our own country. One instance of this kind will suffice. In the 10th year of the reign of Edward IV. (1470) George Nevill, brother to the Earl of Warwick, at his installment into the archiepiscopal see of York, entertained most of the nobility and principal clergy, when his bill of fare was 300 quarters of wheat, 350 tuns of ale, 104 tuns of wine, a pipe of spiced wine, 80 fat oxen, 6 wild bulls, 1004 wethers, 300 hogs, 300 calves, 3000 geese, 3000 capons, 300 pigs, 100 peacocks, 200 cranes, 200 kids, 2000 chickens, 4000 pigeons, 4000 rabbits, 204 bitterns, 4000 ducks, 200 pheasants, 500 partridges, 2000 woodcocks, 400 plovers, 100 curlews, 100 quails, 1000 egrets, 200 rees, 400 bucks, does and roebucks, 1500 hot venison pasties, 4000 cold ditto, 1000 dishes of jelly parted, 4000 dishes of jelly plain, 4000 cold custards, 2000 hot custards, 300 pikes, 300 breams, 8 seals, 4 porpoises, and 400 tarts. At this feast the earl of Warwick was steward, the earl of Bedford treasurer, and Lord Hastings comptroller, with many more noble officers, 1000 servitors, 62 cooks, and 515 menial apparitors in the kitchen. But it must not escape our observation, that after his extreme prodigality this man died in the most abject, but unpitied poverty.

LYCÆ'A, in antiquity, an Arcadian festival, answering to the Lupercalia of the Romans.

LYCAN'THROPY, in medicine, a species of madness proceeding from the bite of a dog in a rabid state, which causes the patient to make a noise resembling the howling of a wolf.

LYCE'UM, in Grecian antiquity, an academy situated upon the banks of the Ilissus at Athens. It was composed of porticos and walks, where Aristotle taught philosophy; walking there constantly every day till the hour of anointing, whence he and his followers were called *peripatetics*.

LYCHNIS, in botany, a genus of plants, class 10 *Decandria*, order 5 *Pentagynia*. The species are perennials.

LY'CIUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs, and consist of the different varieties of Box Thorn.

LYCOPO'DIUM, or Club Moss, a sort of moss, the seeds of which when ignited burn off like a flash of lightning. It is used in melo-dramatic pieces, &c. at the theatres.

LYCOPSIS, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are annuals, consisting of various kinds of Bugloss.

LYDIAN MOOD, in music, a term given to an effeminate kind of music used first by the Lydians.





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LYDIUS LAPIS, or LYDIAN STONE, in mineralogy, a stone of a grayish black colour, which is found in Bohemia and other parts of Germany, and also in Scotland. When polished, it is used as a test stone for determining the purity of gold and silver. It was used for that purpose among the ancients, by whom it received this name, because it was found only in the Tmolus, a river of Lydia.

LYMPH, in anatomy, a colourless fluid, or clear limpid humour, secreted from the blood, which is carried by the lymphatic vessels into the thoracic duct, where it mixes with the chyle. Its constituent principles appear to be albuminous water and a little salt.

LYMPHATICS, vessels which absorb the superfluous moisture of lymph in the animal system, and convey it to the chyle. With the lacteal vessels of the intestines, they form what is termed the *absorbent system*.

LYNX, in zoology, an animal of the genus *Felis*, of which there are three species. They are the size of a wild cat, and have many of that animal's habits. In Asia they are tamed for hunting, and are proverbial for the keenness of their sight.

LYRA, in astronomy, a constellation in the northern hemisphere.——In anatomy, the triangular medullary space between the posterior crura.

LYRATE, or LYRATED, in botany, an epithet for a leaf that is divided transversely into several jags, the lower ones smaller and more remote from each other than the upper ones.

LYRE (*lyra*, Lat.), a musical instrument of the stringed kind. The modern lyre, or Welsh harp, consisting of forty strings, is well known, but the structure of ancient lyres cannot be ascertained. The lyre among poets, painters and statuaries is attributed to Apollo and the Muses. It is said to have been originally formed of a tortoise-shell, whence it is sometimes called *testudo*.

LYRIC, in general, something that is sung or played on the lyre; but it is more particularly applied to the ancient odes and stanzas, answering to our airs and songs, and which may be played on instruments. *Lyric poetry* was originally employed in celebrating the praises of gods and heroes, and its characteristic was sweetness. It was much cultivated by the Greeks, particularly by Anacreon, Alcæus, and Sappho; but among the Romans, Horace was the first and principal lyric poet.

LYSSA, in medicine, that most dreadful malady, canine madness; for our observations on which, see HYDROPHOBIA.

LYTTA, in entomology, a genus of insects, order *Coleoptera*. [See CANTHARIDES.]

# M.

M, the thirteenth letter of the English alphabet, is a liquid and labial consonant, pronounced by slightly striking the under lip against the upper one. It is sometimes called a semi-vowel, as the articulation or compression of the lips is accompanied with a humming sound through the nose. M. as a numeral stands for *mille*, a thousand; and with a dash over it, 1,000,000. M.A. *magister artium*: M.D. *medicinæ doctor*: MS. *manuscript*, and MSS. *manuscripts*. In the prescriptions of physicians, M. stands for *manipulus*, a handful; and sometimes for *misce*, or *mixtura*. M. also stands for *noon*, from the Latin *meridies*: hence P.M. *post meridiem* (afternoon); and A.M. *ante meridiem* (morning). M, in French, stands for *Monsieur*; MM. for *Messieurs*.

MAB, in northern mythology, the queen of the imaginary beings called fairies; so fancifully described by the sportive imagination of Shakspeare, in Romeo and Juliet.

MAC, an Irish word, signifying a son, frequently added to the beginning of surnames, as Macdonald or M'Donald, for Donaldson.

MACAD'AMIZING, a method of making roads, first publicly introduced by Mr. Mac Adam, which consists in breaking the stones so small that they may bind with the earth into a solid smooth mass.

MACARO'NI, or MACCARO'NI, a kind of biscuit made of flour, eggs, sugar, and almonds. Made in a more simple way, it forms a favourite article of food among the Italians. In commerce, it is known as Genoese paste, and is made into a tubular or pipe form, of the thickness of goose-quills.——A term of contempt for a fop or coxcomb.

MACARON'IC, or MACARO'NIAN, an appellation given to a burlesque kind of poetry, made up of a jumble of words of different languages, of Latin words modernized, or of native words ending in Latin terminations.

MACAW', in ornithology, a sort of parrot, with a long tail, the *Psittacus macao* of Linnæus. It is above a yard long, lives in palm woods, and is easily tamed when young.

MAC'CABEES, two apocryphal books of Scripture, containing the history of Judas and his brothers, and their wars against the Syrian kings in defence of their religion and liberties. The first book is an excellent history, and comes nearest to the



THE INVENTION OF THE LYRE IS VARIOUSLY ASCRIBED, BUT IT ONLY PROVES THAT MUSIC WAS EARLY CULTIVATED IN MANY COUNTRIES.

MANY POETASTERS FOOLISHLY IMAGINE THAT EVERY EXPRESSION OF FEELING, IF IN VERSE, DESERVES THE NAME OF A "LYRIC POEM."

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IT HAS BEEN DOUBTED WHETHER MACHIAVELLI MEANT TO RECOMMEND TYRANNICAL MAXIMS, OR TO EXCITE ABHORRENCE FOR THEM.

style of the sacred historians. The second book of the Maccabees begins with two epistles sent from the Jews of Jerusalem to the Jews of Egypt and Alexandria, to exhort them to observe the feast of the dedication of the new altar erected by Judas on his purifying the temple.

MACE, the second coat or envelop of the kernel of the nutmeg, is a thin and membranaceous substance, of an oleaginous nature and a yellowish colour; being met with in flakes of an inch and more in length, which are divided into a multitude of ramifications. It is extremely fragrant, and of an aromatic and agreeable flavour. ——*Mace*, an ornamented staff, borne as an ensign of honour before a magistrate. Originally the mace was a club or instrument of war, made of iron, and much used by cavalry.

MACERATION, in chemistry, the process of obtaining the virtues of bodies, by soaking them in fluids. It differs from *digestion* only as the latter operation admits the application of heat.

MACHIAVELISM, the principles inculcated by Machiavelli, an Italian writer, secretary and historiographer to the republic of Florence. Hence the word *Machiavelian* denotes political cunning and artifice, intended to favour arbitrary power.

MACHICOLATION, in ancient warfare, the pouring of hot substances through apertures in the upper part of the castle gate upon assailants.

MACHI'NE, an engine or artificial work, simple or complicated, composed of several parts, put together by mechanical art and contrivance, for the purpose of raising bodies, assisting, regulating, or stopping their motions, &c. The simple machines comprehend the six mechanical powers. Compound machines are composed of two or more of these powers for the production of motion or force. Machines are likewise distinguished according to the purposes for which they are used, as the architectural machine, electrical machine, hydraulic machine, printing machine, &c.——The utility of *machinery*, in its application to manufactures, consists in the addition which it makes to human power, the economy of time, and the conversion of substances apparently worthless into valuable products. In the history of every science, we find the improvements of its machinery to constitute an important part. All machines are intended either to produce power, or merely to transmit power and execute work. Of the class of mechanical agents by which motion is transmitted,—the lever, the pulley, the wedge,—it has been demonstrated that no power is gained by their use, however combined. Whatever force is applied at one part, can only be exerted at some other, diminished by friction and other incidental causes; and whatever is gained in rapidity of execution, is compensated by the necessity of exerting additional force. These two principles should be constantly borne in mind, and teach us to limit our attempts to things which are possible. Among the extraordinary powers of machinery are some which human power, unaided by machinery, could never effect. For instance, the same power which twists the stoutest cable, and weaves the coarsest canvas, may be employed, with equal advantage, in spinning the gossamer thread of the cotton, and entwining, with fairy fingers, the meshes of the most delicate fabric.

MACK'EREL, *(schomber)*, in ichthyology, a tribe of well-known migratory fishes, esteemed as an article of food, and possessing, when alive, great symmetry of form and brilliancy of colours. The mackerel is easily taken, by a variety of baits, and the capture always succeeds best during a gentle breeze of wind, which is hence termed a mackerel-breeze or mackerel-gale. [See FISHERIES.]

MACLE, in mineralogy, a name given to chiastolite or hollow spar.

MAC'LURITE, a mineral of a brilliant pale green colour.

MAC'ROCOSM, the universe, or the visible system of worlds; opposed to *microcosm*, or the world of man.

MACROSCEL'IDES. This curious insectivorous mammal, which inhabits the rocky mountains of the western part of the district of Algiers, has been recently observed by M. Wagner. It inhabits the crevices of rocks, and makes its bed in the underwood of the dwarf palm; it eats the larvæ of insects, grasshoppers, and terrestrial molluscs, introducing its rostrum into the small shells before the animal has time to retreat. It is remarkably gentle, only expressing uneasiness by a low sound, something like a sigh. It raises itself on its hind legs when it hears any sudden noise, and also leaps upon its prey, but never walks solely on two legs like the Jerboa. It disappears in the rainy season, and during the great heat.—*Athenæum*.

MAC'ULÆ, dark spots appearing on the luminous faces of the sun, moon, and even some of the planets. They were first discovered by Galileo, soon after he had invented his telescope. It has been supposed that these spots adhere to, or float upon the surface of the sun, because, 1. Many of them are observed to break near the middle of the sun's disc, others to decay and vanish there, or at some distance from his limb. 2. Their apparent velocities are always greatest over the middle of the disc, and gradually slower from thence on each side towards the limb. 3. The shape of the spots varies according to their position on the several parts of the disc; those which are round and broad in the middle grow oblong and slender as they approach the limb, as they ought by the rules of optics. By means of these spots the diurnal revolutions of the sun and planets have been discovered.—The spots, or macule, observable on the moon's surface, seem to be only cavities or large caverns on which the sun shining very obliquely, and touching only their upper edge with his light, the deeper places remain without light; but as

WHAT IS GENERALLY UNDERSTOOD BY MACHIAVELISM, IS THAT UNSCRUPULOUS POLICY WHICH MAKES USE OF ANY MEANS TO ATTAIN AN OBJECT.



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THROUGH MADDER CONTAINS A BEAUTIFUL AND FAST COLOUR, IT REQUIRES MANY PRECARIOUS AND DIFFICULT OPERATIONS TO FIX IT.

the sun rises higher upon them, they receive more light, and the shadow, or dark parts, grow smaller and shorter, till the sun comes at last to shine directly upon them, and then the whole cavity will be illustrated: but the dark, dusky spots, which continue always the same, are supposed to proceed from a kind of matter or soil which reflects less light than that of the other regions.——*Maculæ*, in medicine, any discolorations in the surface of the body, or its different parts, which appear in the form of spots. They are differently denominated according to the colour, part affected, &c.; as *maculæ albæ*, white spots on the eye; *maculæ latæ*, the shingles; *maculæ volaticæ*, flying eruptions, &c.

MAD'DER, the root of the *Rubia tinctorum*, or dyer's madder, to whom it is a most important article, on account of the fine scarlet colour it affords: indeed, it is so essential to dyers and calico printers, that their manufactures could scarcely be carried on without it. The madder-root grows in France and other countries of Europe: that of Zealand is the best of European growth, but that which comes from the Levant is still more esteemed. The root is perennial, long, creeping, about as large as a quill, and red within and without; from it arise several trailing, quadrangular stems, rough, branching, and two or three feet in length; leaves are oblong-oval; the flowers yellow and small, making their appearance in June and July, and are succeeded by blackish berries. In the middle part of the root, which contains the finest colouring matter, there may be distinguished, by the microscope, a great many red particles dispersed among the fibres, which constitute the rich dyeing material. The root is also used in medicine.

MAD'NESS, a dreadful kind of delirium, without fever, in which the patient raves or is furious. Melancholy and madness may very justly be considered as diseases nearly allied; for they have both the same origin, that is, an excessive congestion of blood in the brain: they only differ in degree, and with respect to the time of appearing; melancholy being the primary disease, of which madness is the augmentation. Both these disorders indicate a weakness of the brain, which may proceed from an hereditary disposition; from violent disorders of the mind, especially long continued grief, sadness, anxiety, dread, and terror; from close study and intense application of mind to one subject; from narcotic and stupefying medicines; and from great excess or uncurbed indulgence in any passion or emotion. The treatment of madness is partly corporeal, partly mental. The leading indications under the first head are: to diminish vascular or nervous excitement when excessive, as in mania; to decrease them when defective, as in melancholia. In the mental treatment, it is necessary to inspire the unhappy victims with a certain degree of awe from a conviction of superior power, and at the same time, seek to gain their confidence by steadiness and humanity, while we endeavour to amuse them without making our design apparent.

MAD'RIGAL, in the Italian, Spanish, and French poetry, is a short, amorous poem, composed of a number of free and unequal verses, neither confined to the regularity of the sonnet, or to the subtilty of the epigram, but containing some tender and delicate thought, suitably expressed.

MAD'REPORE, a submarine substance of a stony hardness, resembling coral. It consists of carbonate of lime with some animal matter; is of a white colour, wrinkled on the surface, and full of cavities or cells, inhabited by a small animal. From a liquor discharged by this animal, the substance is said to be formed. Madrepores constitute a genus of polypi, of variable forms, always garnished with radiated plates.

MAD'REPORITE, a variety of limestone, so called on account of its occurring in radiated prismatic concretions resembling the stars of madrepores. Also a name given to certain petrified bones found in Normandy, belonging to a cetaceous fish or to a species of crocodile; but which have none of the properties of madrepore.

MÆSTO'SO, in music, an Italian word signifying *majestic*, and used as a direction to play the part with force and grandeur.

MAGAZI'NE, in commerce, a warehouse for all sorts of merchandise.——In military affairs, a storehouse for arms, ammunition, or provisions.——In literature, a periodical work containing miscellaneous matter. The earliest publication of this kind in England, was the *Gentleman's Magazine*, which first appeared in 1731, and which still exists as a most respectable and valuable monthly repertory of literature.

MAGELLAN'IC CLOUDS, in astronomy, three whitish clouds, or appearances resembling clouds, near the south pole, which revolve like the stars. They take their name from Magellan the navigator; and it is possible they may be multitudes of stars, like the milky way.

MAGGIO'RE, in music, an Italian epithet signifying *greater*.

MAG GOT, the larva of the common blow-fly, hatched from the eggs in a few hours. On its changing to a pupa, the skin dries round it, and in ten days the fly emerges.

MA'GI, or MA'GIANS, an ancient religious sect in Persia, and other eastern countries, who maintained that there were two principles, the one the cause of all good, the other the cause of all evil; and, abominating the adoration of images, worshipped God only by fire, which they looked upon as the brightest and most glorious symbol of the Deity. This religion was reformed by Zoroaster, who maintained that there was one supreme independent being; and under him two principles or angels, one the angel of goodness and light, and the other of evil and darkness. The priests of the *Magi* were the most skilful mathematicians and philosophers of the ages in which they lived, insomuch that a learned

THE MODE OF THE INCREASE, REPRODUCTION, AND DEATH OF MADREPORES, HAS NEVER BEEN PROPERLY ASCERTAINED BY NATURALISTS.



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man and a magician became synonymous terms.

MA'GIC, properly signifies the doctrine of the Magi; but the Magi being supposed to have acquired their extraordinary skill from familiar spirits or other supernatural information, the word *magic* acquired the signification it now bears, viz. a science which teaches to perform wonderful and surprising acts, by the application of certain means, which procure the assistance and interposition of demons. The *magicians* of antiquity were generally acquainted with certain secret powers, properties and affinities of bodies, and were hence enabled to produce surprising effects, to astonish the vulgar; and these surprising effects, produced by natural causes, procured them credit in their pretensions to supernatural and miraculous power.—Astrology, divination, enchantments and witchcraft, were parts of this fanciful science; which, from being truly respectable once, as having had for its object mathematics and natural philosophy, by these means became contemptible, its professors opprobrious, its productions ridiculous, and its illusions mere juggler's tricks.——*Natural magic*, the application of natural philosophy to the production of surprising but yet natural effects.

MAGIC LANTERN, an optical machine, invented by Kircher, by means of which are represented on an opposite wall in a dark room monstrous figures, magnified to any size at pleasure. This contrivance consists of a common lantern with a candle in it, to which is added a tube, and one lens to throw the light on the object, and another lens to magnify the image on the wall.

MAGIC SQUARE, in arithmetic, a square figure formed by a series of numbers in mathematical proportion, so disposed in parallel and equal ranks, that the sums of each row, taken either perpendicularly, horizontally, or diagonally, are equal.

MA'GISTRATE, any public civil officer to whom the executive power of the law is committed, either wholly or in part.

MAG'MA, the generic name of any crude mixture of mineral or organic matters, in a thin pasty state.

MAG'NA CHARTA LIBERTA'TUM, generally known as MAGNA CHARTA, the Great Charter of Liberties, obtained by the English barons from king John, in 1215. The barons consisted of the whole nobility of England; their followers comprehended all the yeomanry and free peasantry, and the accession of the capital was a pledge of the adherence of the citizens and burgesses. John had been obliged to yield to this general union, and conferences were opened, on the plain called Runneymede, on the banks of the Thames, near Staines, in sight of the forces of each. At length the preliminaries being agreed on, the barons presented heads of their grievances and means of redress; and the king directed that the articles should be reduced to the form of a charter, in which state it issued as a royal grant. To secure the execution of this charter, John was compelled to surrender the city and Tower of London, to be temporarily held by the barons, and consented that the barons should choose twenty-five of their number, to be guardians of the liberties of the kingdom, with power, in case of any breach of the charter, or denial of redress, to make war on the king, to seize his castle and lands, and to distress and annoy him in every possible way till justice was done. Many parts of the charter were pointed against the abuses of the power of the king as lord paramount; the tyrannical exercise of the forest laws was checked, and many grievances incident to feudal tenures were mitigated or abolished. But besides these provisions, it contains many for the benefit of the people at large, and a few maxims of just government, applicable to all places and times.

MAGNANIER *(French)*, the name given in the southern departments of France to the proprietor of a nursery in which silk-worms are reared upon an extensive scale, or to the manager of the establishment.

MAGNE'SIA, in chemistry, one of the primitive earths, having a metallic basis called *magnesium*. It exists in abundance in combination with other substances, but has never been found perfectly pure in nature. It is an ingredient in many fossils; and several of the salts, which it forms in combination with the acids, are found in mineral springs, and in the water of the ocean. From these combinations, magnesia is obtained by different artificial processes.—Take one part of Epsom salt and let it be dissolved in twenty parts of water: the solution is to be filtered, and to this is to be added, while hot, a solution of pure potash or soda, as long as precipitation is produced. The alkali combines with the sulphuric acid, and the magnesia is separated, and falls down in white powder. It is then washed in water till the liquor comes off tasteless.—This earth exists under the form of a white powder: it is much used in medicine as a very gentle laxative, and as an absorbent to destroy acidity in the stomach.—Epsom salt is compounded of sulphuric acid and magnesia, the chemical name is of course the *sulphate of magnesia*.—The *carbonate of magnesia*, or magnesia compounded with carbonic-acid-gas, is a very important compound.

MAGNE'SIAN LIMESTONE, in geology, carbonate of lime associated with carbonate of magnesia. The lime resulting from the calcination of magnesian limestone is said to have an injurious action on vegetation, unless applied in quantities considerably less than common lime, when it is found to fertilize the soil.

MAG'NESITE, in mineralogy, magnesia combined with silex. It occurs in amorphous masses, or in masses tuberous and spongiform; its colour is yellowish gray, or white with spots, and dendritic delineations of blackish brown. It forms an excellent and beautiful mortar cement for terraces.

MAG'NET, or LOAD'STONE *(magnes)*,



THE WORD "MAGISTRATE" IS PARTICULARLY APPLIED TO SUCH OFFICERS AS MAYORS, GOVERNORS, PREFECTS, JUSTICES OF THE PEACE, &c.

THE ONLY WAY IN WHICH MAGNESIA IS EMPLOYED IN THE ARTS, IS FOR THE PURIFICATION OF FINE OIL, IN THE PREPARATION OF VARNISH.

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in natural history, a very rich iron ore, found in large detached masses, of a dusky iron-gray, often tinged with a brownish or reddish hue, and when broken appearing something like the common emery, but less sparkling. It is very heavy, tolerably hard, of a perfectly irregular and uneven surface, and of a firm structure, but usually with some porous irregularities within. It is found in all places where there are iron mines. The primary properties of the loadstone are the following: 1. Every loadstone has two points, called poles, which emit the magnetic virtue. 2. One of these poles attracts, the other repels iron, but no other body. 3 This virtue, being the third species of attraction, is communicated to iron very copiously by the touch, which renders it strongly magnetic. 4. A piece of iron so touched by the loadstone, and nicely suspended on a sharp point, will be determined to settle itself in a direction nearly north and south. 5. The end of the needle touched by the south pole of the load, will point northwards; and the contrary. 6. Needles touched by it, will dip below the horizon, or be directed on the touched part to a point within the earth's surface: this is called the dipping needle. 7. This virtue may also be communicated to iron by a strong attrition all one way. 8. Iron-rods or bars acquire a magnetic virtue by standing long in one position. 9. Fire totally destroys this virtue, by making the stone or iron red-hot. 10. This power is exerted sensibly to the distance of several feet. 11. It is sensibly continued through the substance of several contiguous bodies or pieces of iron. 12. It pervades the pores of the hardest body; and equally attracts the iron in vacuo as in open air. These and many more are the properties of a body, not more wonderful than useful to mankind.——There being two distinct kinds of action in magnetical bodies, scientific men have considered that there are two distinct species of magnetic fluid, the particles of the one fluid having the property of attracting the particles of the other; but when the particles are separate, they repel; each repels the particles of its own kind, &c.——The most simple magnetical instrument is the *horizontal needle*. This needle consists of a bar of hardened steel magnetized. The bar is made of various forms, being commonly rectangular, but having a broad portion in the centre. There is a hole made in the middle of the broad portion, which is tapped with a screw, to receive an exterior screw turned upon a brass cap, into which is fitted a piece of agate, on which the needle is balanced upon a steel point. It is then suspended in a box made of brass or wood. Below the needle a circular card is placed, whose circumference is divided into degrees or minutes, or more commonly into thirty-two equal parts, called points. The axis of the needle passes through the centre of the card. The four cardinal points are marked on the card; and the intermediate divisions are, for the purpose of very nice observations, laid off in degrees and minutes; and, should great delicacy be required, the needle is made to carry a vernier. When the apparatus is used for land surveying or astronomical purposes, the box is furnished with sights. When the compass is used for observations at sea, the card is also suspended upon a point, and the box in which it is contained is hung upon gimbals; the whole forming a sort of universal joint, in order that the needle and card may retain the horizontal position, independent of the heaving of the ship.

MAG'NETISM, that branch of science which treats of the property of attracting and repelling iron, as the loadstone does. It was partially known to the ancients, but it does not appear that they knew anything of its directive power, which has been so usefully employed by the moderns. [See the previous article.]——*Terrestrial Magnetism.* "Professor Gauss, of Gottingen, received from the Royal Society, a Copley medal, for his recent improvements in the methods of making Magnetic Observations, and for his theoretical investigations relative to Terrestrial Magnetism. By the use of heavy needles, if the word may be applied to magnetical bars from one to twenty-five pounds in weight; by a multitude of ingenious and delicate applications of principles more or less well-known in the abstract, but never before brought into combination; and, above all, by a profound and powerful mathematical analysis, embracing the subject of terrestrial magnetism in a general point of view, and furnishing resources before unimagined for estimating its effects in the various phases of inclination (or dip), declination (or variation), and intensity,—Professor Gauss has given to magnetic determinations the precision of astronomical observation, and, in fact, may almost be said to have created anew this important department of science. One very extraordinary fact has already resulted from this system of observation, carried on (in pursuance of a suggestion of Humboldt) by a great many observers in correspondence with each other, viz., that the magnetism of the earth is a state of continual and restless fluctuation—as much so as the waves of the sea, or the pressure of the air; but that its changes from *moment to moment* are strictly simultaneous at every point where observations of this nature have yet been made, embracing (now) the whole extent of Europe, from Upsal in Sweden, to Catania in Sicily, and from St. Petersburgh to Dublin! so that even the difference in longitude of these distant stations might be obtained from magnetic observations." It is a remarkable circumstance, says Major Sabine, that at the commencement of the present century, there was not a single published observation to attest the existence of any difference whatsoever in the intensity of the magnetic force at different parts of the earth.—Sir John Herschel, in eulogizing Major Sabine's report on the magnetic survey of Great Britain, at a late meeting of the British Association, observed, that he would not

IN ELECTRO-MAGNETISM, A MAGNETIZED NEEDLE ALWAYS PLACES ITSELF AT RIGHT ANGLES TO A GALVANISED WIRE.

NO ATTEMPT WAS MADE TO FORM A THEORY OF MAGNETISM BEFORE DR. GILBERT, IN 1600, PUBLISHED HIS WORK "DE MAGNETE."



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THE ADVOCATES OF ANIMAL MAGNETISM PRETEND THAT IT PRODUCES THE GREATEST BODILY COMFORT AND PURITY OF SOUL.

pretend to anticipate the importance of the results, but he saw an epoch fast approaching when Terrestrial Magnetism would take its place among the strictest of the mathematical sciences; he could not but believe, that the day was near when, perhaps, it would rank second only to astronomy, and when its details would be as well understood as the doctrine of the pendulum, and its dynamics studied as those of any other branch of physics. Some of the late determinations of Gauss were truly sublime. He has just ascertained that the variation is subject to small oscillations, which take place simultaneously everywhere over the whole of Europe, and probably, over the earth, so that the cause of this appears to be communicated in an instant from the east to the west.——*Animal Magnetism*, a sympathy supposed to exist between the magnet and the human body. The origin of the term was a fancied analogy between the action of the mineral magnet and that of the animal energy, or *vice versa*, to which these effects were attributed: but subsequent experience has convinced most people that the effects of what is termed animal magnetism may be ascribed to a heated imagination, to an excitement, half spiritual, half sensual, and to a morbid sensitiveness. It originated thus: A German physician, named Anthony Mesmer, in 1772, attempted cures with the mineral magnet, and excited some sensation in Vienna, but at length declared, that not the magnet, but a mysterious power in his own person caused the effects ascribed to the magnet, and that this power was related not only to the magnetic power, but to the attraction dispersed throughout the universe. From Vienna he went to Paris, where he gained a number of proselytes, and eventually obtained 340,000 livres for revealing the principles of his pretended discovery. The government at length appointed a committee of physicians, and members of the academy of sciences, among whom was Dr. Franklin, to investigate the pretensions of Mesmer, and the result of their inquiries appeared in an admirable memoir, drawn up by M. Bailly, which completely exposed the futility of animal magnetism, and the quackery of its author.

MAGNIFICO, the title given by courtesy to a nobleman of Venice.

MAG'NIFYING POWER, in optics, the enlargement of the angle under which an object can be seen, effected in telescopes and microscopes by producing an image of the object, and then viewing the image, by another glass, very close, thereby enlarging the angle, and of course magnifying the object.

MAG'NITUDE, whatever is made up of parts locally extended, or that has several dimensions; as a line, surface, solid, &c. The apparent magnitude of a body is that measured by the visual angle, formed by rays drawn from its extremes to the centre of the eye; so that whatever things are seen under the same or equal angles, appear equal; and, *vice versâ*.

MAGNO'LIA, the LAUREL-LEAFED TULIP-TREE, in botany, a genus of plants, class 13 *Polyandria*, order 7 *Polygamia*: the corolla of which consists of nine oblong, hollow, and obtuse petals, narrowest towards the base. The *Magnolia grandiflora*, or the great magnolia, is the principal species. It is a native of Florida, and is remarkable for its large evergreen leaves and white flowers, which are conspicuous at a great distance. Two others of the species also deserve particular notice. One is the *Magnolia macrophylla*, the leaves of which are between two and three feet long, and the flowers upwards of a foot in diameter. The petals are from six to nine in number, and the three exterior ones have a purple spot at the base. It grows in the south-western parts of the Alleghanies. The other is the *Magnolia glauca*, or beaver-wood, a beautiful shrub, with leaves and flowers much smaller than any of the rest of the genus. The flowers are very elegant, and diffuse a delightful fragrance; the leaves and wood have also a strong aromatic taste.

MAG'PIE, in ornithology, a well-known chattering bird, of the genus *Corvus*, resembling in its habits and manners the other birds of the crow kind. It has a black bill, wings, and tail; but the latter are variegated with white, green, purple, and blue, of different shades. When taken young, they readily become domesticated, and learn to repeat many words and sentences, as well as to imitate every noise within hearing.

MAHOG'ANY, the wood of a tree of the genus *Swietena*, growing in America and the West Indies. Our most beautiful and durable articles of cabinet furniture are made of this wood, which is of a reddish brown colour, and susceptible of a fine polish. The trunk of this majestic tree is often 40 feet in length, and 6 feet in diameter; and it divides into so many massy arms, and throws the shade of its shining green leaves over so vast an extent of surface, that few more magnificent objects are to be met with in the vegetable world. The principal importations into Great Britain are made from Honduras and Campeachy. "Not long since," observes Mr. M'Culloch, "Messrs. Broadwood, the distinguished pianoforte makers, gave the enormous sum of 3000*l.* for three logs of mahogany! These logs, the produce of a *single tree*, were each about 16 feet long and 38 inches square: they were cut into veneers of 8 to an inch. The wood was particularly beautiful, capable of receiving the highest polish; and when polished, reflecting the light in the most varied manner, like the surface of a crystal; and, from the wavy form of the pores, offering a different figure in whatever direction it was viewed."

MAHOM'ETANS, or MOHAM'MEDANS, believers in the doctrines and divine mission of Mahomet, the warrior and prophet of Arabia, whose creed maintains that there is but one God, and that Mahomet is his prophet, and teaches ceremonies

IT IS ASSERTED THAT PATIENTS WHO ARE TREATED BY THE SAME MAGNETISER HAVE AN OBVIOUS INCLINATION FOR EACH OTHER.



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by prayer, with washings, &c. almsgiving, fasting, sobriety, pilgrimage to Mecca, &c. Besides these they have some negative precepts and institutions of the Koran, in which several things are prohibited, as usury, the drinking of wine, all games that depend upon chance, the eating of blood and swine's flesh, and whatever dies of itself, is strangled, or is killed by a blow or by another beast. These doctrines and practices Mahomet established by the sword, by preaching, and by the alcoran or koran, which contains the principles of his religion; and he and his followers met with such success, as in a few years to subdue half the known world. [See ALCORAN.]

MAI'DEN, an instrument formerly used in Scotland for beheading criminals. It consists of a broad piece of iron about a foot square, very sharp on the lower part, and loaded above with lead. At the time of execution it was pulled up to the top of a frame, about ten feet high, with a groove on each side for the maiden to slide in. The prisoner's neck being fastened to a bar underneath, and the sign given, the maiden was let loose, and the head instantly severed from the body. It was the prototype of the French guillotine.——*Maiden Assize*, an assize in which no person is condemned to die.

MA'JESTY, a title given commonly to kings. It was first used in England in the reign of Henry VIII. instead of "*highness.*"

MAI'HEM, or MAY'HEM, in law, a wound or hurt, by which a man loses the use of any member. It originally applied to such corporeal injuries as rendered a man less fit for war.

MAIL, a coat of steel net-work, formerly worn for defending the body against swords, lances, &c. The mail was of two sorts, chain and plate mail; the former consisting of iron rings, each having four others inserted into it; the latter consisting of a number of small plates of metal, laid over one another like the scales of a fish, and sewed down to a strong linen or leathern jacket.——In ships, a square machine composed of rings interwoven, like net-work, used for rubbing off the loose hemp on lines and white cordage.——*Mail*, or *Mail-bag*, a leathern bag for the conveyance of letters.——*Mail-coach*, a coach of a particular construction for expeditious travelling, several of which are employed by government for the conveyance of letters to all parts of England. Mail-coaches were first brought into use in 1784; and the speed at which they travelled, when compared with other public conveyances, excited almost as much wonder in those bygone times, as railway travelling does now. If we may judge by present appearances, these compact, elegant, and well-appointed vehicles will not much longer be needed; nay, it requires no great stretch of the imagination to presume, that the time is not *far* distant when a mail-coachman may be regarded as a *lusus naturæ*, and his great coat and whip be placed among the curiosities in the British Museum, as relics of an age when science was scarcely in its leading-strings!

MAILED, in heraldry, a term for speckled, as the feathers of hawks, partridges, &c.

MAIN, in military and naval affairs, a word prefixed to many words, and signifying *principal*; as the *main-guard*, *main-mast*, *mainsail*, &c.

MAIN'PRIZE, in law, the receiving a person into friendly custody who might otherwise be committed to prison, on security given for his forthcoming on a day appointed.

MAIN'TENANCE, in law, is an unlawful maintaining or supporting a suit between others, by stirring up quarrels, or interfering in a cause in which the person has no concern. Thus if any person disinterested in a cause officiously gives evidence, without being called upon for that purpose, or acts the part of counsel by speaking in the cause, or retains an attorney for the party, he is guilty of maintenance, and is liable to be prosecuted by indictment. But it is no maintenance, where a person gives a poor man money out of charity to carry on a suit.

MA'JOR, the title of several military officers, as major-general, major of a brigade, major of a regiment, &c.——*Major*, in logic, the first proposition of a regular syllogism, containing the principal term.——In music, an epithet applied to the modes in which the third is four semitones above the key-note, and to intervals consisting of four semitones. *Major* and *minor* are applied to concords which differ from each other by a semitone.

MAIZE, or INDIAN CORN, a plant of the genus *Zea*, the native corn of America. The root is fibrous; the stems rise to the height of from four to ten feet; and like other grasses (for it belongs to the natural family *gramineæ*) they are furnished with knots at intervals. The styles are very numerous, six to eight inches long, and hang down like a silken tassel from the extremity of the foliaceous envelope; the seeds or grains are rounded externally, angular and compressed at the sides, and tapering towards the base, and are disposed in several longitudinal series. Maize is now very extensively cultivated, not only in America, but throughout a great part of Asia and Africa, as also in several countries in the south of Europe. In many of the provinces of France it forms almost exclusively the sustenance of the inhabitants. The spikes or ears are gathered by hand, and the husks, when perfectly dry, stript off, and, together with the stalks, laid by for winter fodder, while the ears are conveyed to the granary. Next to wheat, it is considered the most nutritious grain.

MAL'ACHITE, in mineralogy, the green carbonate of copper, found frequently crystallized in long slender needles. It consists of copper, carbonic acid, oxygen, and water. It takes a good polish, and is often manufactured into toys.

MAL'ACOLITE, in mineralogy, another



COMPLETE COATS OF MAIL CONTINUED TO BE USED THROUGH THE SEVENTEENTH CENTURY, AND AT THE BEGINNING OF THE EIGHTEENTH.

ONE EAR OF MAIZE CONTAINS ABOUT 600 GRAINS, SET CLOSE TOGETHER IN ROWS, TO THE NUMBER OF EIGHT OR TEN.

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name for *diopside*, a mineral found in the silver mines of Sweden, and also in Norway, consisting of silica, lime, alumina, oxyde of iron, &c.

MALACOPTERY'GIOUS, in ichthyology, an appellation given to one of the five orders of fishes, from their having the rays of their fins bony, but not pointed or sharp at the extremities, like those of acanthopterygious fishes.

MALACOS'TOMOUS, an epithet for those fishes destitute of teeth in the jaws, vulgarly called leather-mouthed; as the tench, carp, bream, &c.

MALADMINISTRATION, bad management of public affairs, or a misdemeanour in public employments, particularly of executive and ministerial duties, prescribed by law.

MAL'AGA, a species of wine imported from Malaga, in Spain.

MAL'ATES, in chemistry, salts formed by the union of the malic acid with different bases. The malates of potash, soda, and ammonia are deliquescent.

MALA'RIA, (Italian *mal' aria*, bad air) a state of the atmosphere, or soil, or both, which, in certain regions in the warm season, produces a fever more or less violent according to the nature of the exposure. The country of the *mal' aria*, in Italy, extends from Leghorn to Terracina, about 200 miles, and from the sea to the Appenines, from 25 to 30 miles. The city of Rome has been gradually invaded by it; so that not only the whole of ancient Rome has been deserted, but even the finest parts of the modern city have become unsafe.——It has been found from observation, that although it is commonly supposed that standing waters, when clear and free from smell, and all running waters, are perfectly salubrious, they may, in fact, be nearly as injurious as those that are putrid and stagnant; and that, besides proper marshes, fresh and salt meadows, and wet pasture lands generally, all woods, coppices, thickets, rivers, lakes, ponds, ornamental waters, pools, ditches, plashy and limited spots of ground generally, send forth more or less of this noxious vapour; that wherever, in short, any chemical compound of the vegetable elements is wetted, or held in solution by water, there the poison in question may be, or will be, produced, provided the temperature be sufficiently high; that the smallest spot coming under any of the above denominations is sufficient to produce malaria, and a single inspiration of that malaria to produce disease.

MALE FLOWER *(flos masculus)*, in botany, a flower that bears stamens only, without pistils.

MALE SCREW, in mechanics, a screw that has the spiral thread on the outside of the cylinder.

MA'LIC ACID, in chemistry, an acid procured from the juices of many fruits, but particularly from that of apples. It is composed of oxygen, hydrogen, and carbon, and combines with alkalies, earths, and metallic oxydes so as to form malates.——Malic acid has no smell, but a very sour taste; and affords by distillation a peculiar acid, called *pyromalic*.

MA'LIS, in medicine, a disease of the skin, produced by an insect lodging underneath.

MALLEABIL'ITY, the ductile property of metals, whereby they are capable of extension by the hammer, and of being worked into forms. It is opposed to *brittleness*.

MAL'LEUS, in anatomy, a bone of the ear, so called from its resemblance to a mallet, and in which is observed the head, the neck and handle, which is joined to the membrane of the tympanum.

MAL'LOW, an herbaceous plant, of the genus *Malva*, most species of which grow wild in the field. The common mallow is an annual; but there are several species which are perennials and biennials.

MALM'SEY, the name of a species of grape, and also of a luscious kind of wine.

MALT, the name given to barley when prepared by a particular process, so as to fit it for making into beer, ale, and porter; which are denominated *malt liquors*. The processes of *malting* have for their objects, first, to excite the vegetative powers of the grain, and, then, to stop vegetation. Thus, by the aid of moisture, the barley is made to germinate, that is, to put forth roots, and almost its acrospire, or first sprout; and by the aid of fire, the roots are destroyed, and the acrospire prevented from bursting the skin. By germination, all the principles of the grain are put in motion. The heat which it subsequently undergoes separates its parts, and the viscidity which it before possessed, is removed by the looser texture of its oils, and their intimate union with the salts; which alteration is the cause of the sweetish taste that distinguishes malt from barley.——*Malt kilns* are chambers full of holes in the floor, through which the heat ascends from the furnace below and dries the barley that is laid upon it.

MAL'THA, a variety of bitumen, viscid and tenacious, like pitch; unctuous to the touch, and exhaling a bituminous odour.

MA'LUM IN SE, in law, an offence at common law, in distinction from *malum prohibitum*; such as playing at unlawful games, &c., which are only *mala prohibita* under certain circumstances.

MA'LUM MORTUUM, in medicine, a malignant species of leprosy, or *scabies*, so called because it makes the body, as it were, black and livid.

MAL'VA, in botany, a genus of plants, class 16 *Monadelphia*, order 8 *Polyandria*. The species are mostly annuals, consisting of the various kinds of mallows.

MALVEI'SA, in archæology, a warlike engine that was used to batter down walls.

MALVERSA'TION, in law, misbehaviour in an office, employ, or commission, as breach of trust, extortion, &c.

MAM'ALUKES, or MAM'ELUKES, the name of a dynasty that reigned in Egypt, and who for many years composed the military force of Egypt. They were originally Turkish or Circassian slaves, who being



BEER WAS FORMERLY NOT ONLY THE FAVOURITE LIQUOR IN ENGLAND, BUT THERE WAS SCARCELY ANY OTHER BEVERAGE DRUNK BY THE PEOPLE.

MALTS MAY BE SAID TO BE MALLEABLE IN PROPORTION TO THE DEGREE OR MATTER OF HEAT WHICH THEY CONTAIN IN A LATENT STATE.

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THE FIRST CLASSICAL ARRANGEMENT OF QUADRUPEDS WAS PUBLISHED IN 1693, BY JOHN RAY, A NATIVE OF ENGLAND.

IN RAY'S SYNOPSIS, QUADRUPEDS ARE DIVIDED INTO TWO CLASSES, NAMELY, THOSE WITH HOOFS, AND THOSE PROVIDED WITH NAILS.

instructed in the military exercises, soon exhibited a spirit of insubordination; assassinated the sultan Turan Shah, and, in 1254, appointed Ibegh, one of their own number, sultan of Egypt. They were at length conquered by Selim I., and Cairo, their capital, taken by storm, in 1517. During the French invasion of Egypt by Buonaparte, the Mamelukes formed a fine body of cavalry, and for a time seriously annoyed the invaders, though many afterwards joined them. Mohammed Ali, the pacha of Egypt, annihilated their power, by destroying the beys, in 1811, by a stratagem.

MAMMA'LIA, in the Linnæan system of zoology, the first class of animals, comprehending such as *suckle* their young: the term being derived from *mammæ*, breasts. This class is divided into seven orders:—— 1: *Primates*, animals that have two canine teeth, and four cutting teeth. Of this order there are only three genera; man, the monkey, and the bat. 2: *Bruta*, animals that have no cutting teeth; as the elephant. 3: *Feræ*, animals that have from two to ten cutting teeth; as, the lion. 4: *Glires*, animals that have only two cutting teeth, and no canine teeth; as, the hare. 5: *Pecudes*, animals that have no cutting teeth in the upper jaw; as, the sheep. 6: *Bellua*, animals with cutting teeth in each jaw, and which are furnished with hoofs; as, the horse. 7: *Cetæ*, the whale species.——From man, who, from his most perfect organization, stands at the head of the system, to whales and their congeners, which are classed at the end of the mammalia, the skeleton is formed upon the same general principles, and its parts are only altered or modified to suit the station which the animal is destined to fill. We have followed the classification of Linnæus, as the most simple; but we are bound to notice that Cuvier, Lamarck, and other naturalists, who adopted the Linnæan method as far as it went, have considered it necessary, in consequence of the accumulation of new objects which daily presented themselves, to institute many new genera in every department of zoology. It would, however, lead us far beyond our prescribed limits, were we to follow the extensive classification adhered to by Cuvier; but we will conclude by a quotation illustrative of the principles upon which he grounds his theory: "Every organized being," says he, "forms a whole and entire system, of which all the parts mutually correspond and co-operate to produce the same definite action, by a reciprocal re-action; none of these parts can change, without a change of the others also. Thus, if the intestines of an animal are organized in a manner only to digest fresh flesh, it is necessary that his jaws should be constructed to devour the prey, his claws to seize and tear it, his teeth to divide the flesh, and the whole system of his organs of motion to follow and overtake it, and of his organs of sense to perceive it at a distance. It is necessary, also, that he should have seated in his brain the instinct to hide himself and spread snares for his victim; such are the general conditions of a carnivorous regimen; they must infallibly be united in every carnivorous animal—without them the species could not subsist. But under these general conditions, there are particular ones with respect to the size of the species, and the abode of the prey for which each animal is disposed."

MAMMEE-TREE *(Mammea Americana)*, in botany, a large and beautiful tree, sometimes called the West Indian Apricot, the fruit of which is highly esteemed for its sweet and very agreeable taste, accompanied with an aromatic, pleasant odour. The leaves are oval, six or eight inches in length; the flowers white, an inch and a half in diameter, and diffuse a delightful perfume; and the tree attains the height of sixty or seventy feet.

MAM'MOTH, a species of extinct elephant, found in a fossil state, but entirely distinct from the existing species of Asia and Africa. The bones have been occasionally found in all parts of Europe, Asia, and America, and have given rise to stories of giants. A mammoth, in complete preservation, was seen by Adams, a traveller in Siberia, who found the skeleton to be nine feet and a half high, and fourteen long: the tusks were nine feet long. It is very different from the *mastodon*, a gigantic fossil animal of North America.

MAM'MON, in the *Syriac* language, signifies riches. It is used *Matth.* vi. 24, and *Luke* xvi. 13, and is there called the *mammon* of unrighteousness, intimating that riches are frequently the instruments of iniquity, or acquired by unrighteous means.

MAM'MAL, or MAM'MIFER, in zoology, an animal which has breasts for suckling its young.

MAMMA'RIA, in entomology, a genus of animals of the class *Vermes*, order *Mollusca*, having a smooth body, without cirri or rays.

MAM'MILARY, pertaining to the breasts. Also, an epithet applied to two small protuberances, like nipples, found under the fore ventricles of the brain, and to a process of the temporal bone.

MAN (*homo*), in zoology, is justly ranked at the head of the animal part of the creation; making a distinct genus of that order of quadrupeds, which Linnæus calls *anthropomorpha*, from their resemblance to the human form. Setting aside his divine reason and his immortal nature, Man, in the language of naturalists, is a being provided with two hands, designed for prehension, and having fingers protected by flat nails; and two feet, with single soles, destined for walking; with a single stomach, and three kinds of teeth,—incisive, canine, and molar. His position is upright; his food both vegetable and animal; his body naked. It has been made a subject of dispute whether there is more than one species of the human race; but it is merely a dispute of words; and if the term *species* is used in its common scientific sense, it cannot be denied that there is but one species. There are, however, certain and constant differences of stature, physiognomy, colour, nature of



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A MAN, FAIRLY MEASURED, IS HALF AN INCH TALLER IN THE MORNING THAN AT NIGHT, OWING TO THE RELAXATION OF THE CARTILAGES.

AT ABOUT THE AGE OF THIRTY-FIVE, A FAT MAN VERY OFTEN BECOMES THINNER, AND ONE WHO IS LEAN GENERALLY BECOMES FATTER.

the hair, or form of the skull, which have given rise to subdivisions of this species. The most natural and best defined classification is that of Blumenbach, who divides mankind into five varieties. 1: The first variety occupies the central parts of the old Continent, namely, Western Asia, Eastern and Northern Africa, Hindostan, and Europe. Its characters are the colour of the skin, more or less white or brown; the cheeks tinged with red; long hair, either brown or fair; the head almost spherical; the face oval and narrow; the features moderately marked, the nose slightly arched; the mouth small; the front teeth placed perpendicularly in the jaws; the chin full and round. This is called the *Caucasian*, from its supposed origin in the Caucasus. 2: The second variety has been termed the *Eastern*. The colour in this race is yellow; the hair black, stiff, straight, and rather thin; the head almost square; the face large, flat, and depressed; the features indistinctly marked; the nose small and flat; the cheeks round and prominent; the chin pointed, the eyes small. This variety comprises the Asiatics to the east of the Ganges and of mount Beloor, except the Malays: it includes the Turks, Egyptians, Persians, Hindoos, the Tartars, Chinese, &c. 3: The *American* variety resembles the last described in several points. Its principal characters are the copper colour; stiff, thin, straight, black hair; low forehead; eyes sunk; the nose somewhat projecting; cheek-bones prominent; face large. This variety comprises all the Americans except the Esquimaux. 4: The fourth variety is called by Blumenbach the *Malay*, and described as of a tawny colour; the hair black, soft, thick, and curled; the forehead a little projecting; the nose thick, wide, and flattened; the mouth large; the upper jaw projecting. This variety comprehends the islanders of the Pacific Ocean. 5: The remaining variety is the Negro. Its characters are, colour black; hair black and woolly, head narrow; forehead convex and arched; cheek-bones projecting; nose large, and almost confounded with the upper jaw; the upper front teeth obliquely placed; the lips thick; the chin drawn in; the legs crooked. This race is found in Western and Southern Africa, and the great islands of the Pacific, generally in the interior. There are very great differences in the tribes included in this variety; witness the Negro, with the complexion of jet, and wool; the Caffre, with a copper complexion, and long hair; the sooty Papous, or New Guineaman; the native of Van Dieman's Land; and the Hottentots.——Man is the only animal which possesses, in the same degree, flexible powers of speech, by which he is enabled to communicate his thoughts; and this has led, in different tribes, to the invention of several hundred languages. He is, also, the only animal which possesses the muscles of laughter; and he enjoys, above all others, the nicest powers of reasoning by analogy, from his past experience; and, by the perfection of his hands, is enabled to appropriate most things to his wants. Man is also distinguishable by the originality of his ideas. *Instincts* make up a part of his character; but he is principally the creature of experience and reflection; he builds a habitation, because he has experienced the inclemency of the weather, and because he has reflected upon the means of securing himself against its rage. When he builds, too, it is not like the work of the bee or the beaver, upon any instinctive plan, and that plan the best possible for the purpose, but one in which he presently discovers imperfections; and from which that of another individual of the same species is totally different.——We have elsewhere, under various separate heads, while treating of the subjects, spoken of man in a religious, moral, and intellectual point of view. We shall therefore add nothing to the sketch we have here given.

MAN, an epithet applied to a ship, as a *man-of-war*, a *merchantman*, &c. Also, to "*man* a prize"; to "*man* the topsail sheets;" to "*man* the yards," &c., signifying, to supply either of these with the men necessary for the required purpose.

MAN'AKIN (*Pipra*), in ornithology, the name of a beautiful race of birds found in South America. They are generally small, and inhabit the depths of forests. The largest of them, the *Pipra Militaris*, is distinguished by a beautiful crest of red feathers on its head.

MANA'TI, or MANA'TUS, in zoology, the sea-cow, or fish-tailed walrus, an animal of the genus *Trichechus*, which sometimes grows, it is said, to the enormous length of 23 feet. Of this animal there are two varieties, the *australis* or *lamentin*, and *borealis* or *whale-tailed manati*. It has fore-feet palmated, and furnished with claws, but the hind part ends in a tail like that of a fish. The skin is of a dark colour, the eyes small, and instead of teeth, the mouth is furnished with hard bones, extending the whole length of the jaws. It never leaves the water, but frequents the mouths of rivers, feeding on grass that grows in the water.

MANCHINEEL', in botany, a tree of the genus *Hippomane*, growing in the West Indies to the size of a large oak, and abounding in a milky, acrid juice, of a poisonous quality. The fruit, which is about the size of a small apple, causes inflammation in the mouth and throat, with pains in the stomach. The wood is valuable for cabinet work.

MANDA'MUS, in law, a writ issued from a court of law, and directed to any person, corporation, or inferior court, commanding the performance of some special thing.

MANDARIN', the magistrates and governors of provinces in China, who are chosen out of the most learned men, and whose government is always at a great distance from the place of their birth.

MAN'DIBLE, in ornithology, the upper and under bill of birds. Also, in anatomy, another name for the jaw. [See MAXILLA.]

MAN'DRAKE (*Mandragora*), in botany, a plant of the genus *Atropa*; the corolla of



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which consists of a single erect hollow petal, growing gradually wider from the base; being a little larger than the cup, and divided beyond the middle into five lanceolated segments; the fruit is a great globose berry, containing two cells; the receptacle is fleshy and convex on both sides; the seeds are numerous and kidney-shaped. The mandrake has been esteemed a poison by many; but by others it is declared innocent: the bark of the root was once used as a narcotic; but at present the leaves are only used in medicine. The ancients called mandrakes the apples of love, and Venus had the name of *Mandragoritis*. In consequence of a fancied resemblance of the root to the human form, they attributed to it miraculous powers, and endowed it with many properties, as absurd as they were unfounded.

MAN'DREL, a kind of wooden pulley, forming part of a turner's lathe.

MAN'DRIL, in zoology, a species of monkey.——*Mandril*, in mechanics, a kind of iron spindle, with a screw.

MAN'DUCI, in antiquity, hideous figures introduced at the public representations of the Romans, which served as bugbears.

MAN'EGE, the art of breaking in and riding horses, or the place set apart for equestrian exercises. [See HORSE and HORSEMANSHIP.]

MA'NES, in the pagan system of theology, a general name for the infernal deities. The ancients comprehended under the term *manes* not only Pluto, Prosperine, and Minos, but the souls of the deceased were likewise included. It was usual to erect altars and offer libations to the *manes* of deceased friends and relations, for the superstitious notion that the spirits of the departed had an important influence on the good or bad fortune of the living, made people very cautious of offending them. When it was not known whether a corpse had been buried or not, a cenotaph was erected, and the manes were solemnly invited to rest there, from fear that otherwise they would wander about the world, terrifying the living, and seeking the body which they had once inhabited.

MAN'GANESE, in mineralogy, an ore which, when pure, is of a grayish white colour, and of considerable brilliancy; it has neither taste nor smell, is of the hardness of iron, very brittle, and when reduced to powder, it is attracted by the magnet. The ore of manganese is remarkable for its spontaneous inflammation with oil. From its infusibility, it does not combine readily with many metals, but shows considerable affinity to iron, occurring frequently combined with it in nature, and being supposed to improve the quality of steel. Manganese is applied to no use in its metallic form. Its attraction of oxygen is so rapid, that exposure to the air is sufficient to render it red, brown, black, and friable, in a very short time; it can therefore be only kept under water, oil, or ardent spirit. It is the most combustible of all the metals. It decomposes water by means of heat very rapidly, as well as the greater part of the metallic oxydes. It decomposes sulphuric acid: it is soluble in nitric acid; it is fusible with earths, and colours them brown, violet, or red, according to its state of oxydizement. It frees from colour glasses tinged with iron, and is therefore used in glass-making: it is also used to give a black colour to earthenware.

MANGANE'SIATE, in chemistry, a compound of manganesic acid with a base.

MAN'GEL-WURZEL, in botany, a plant of the beet kind, much used as food for cattle, and valuable from its size and hardy nature.

MAN'GO, in botany, the fruit of a tree, native of the East-Indies, but now growing in most of the tropical regions. The tree is allied to the sumach, attains the height of 30 or 40 feet, and is highly productive. The fruit is kidney-shaped, of a most delicious flavour, and containing a flattened stone. More than eighty varieties of Mango are cultivated, some of which are very beautiful, and diffuse a delightful perfume.

MANGOSTEEN', in botany, a tree of the East-Indies, of the genus *Garcinia*, the fruit of which is shaped like, and about the size of a small orange, being of exquisite flavour, and particularly wholesome. The tree is elegant in its appearance, and grows to the height of about eighteen feet.

MAN'GROVE *(Rhizophora)*, in botany, a genus of plants, consisting of trees or shrubs, which grow in tropical countries along the borders of the sea. Their branches are long, hang down towards the earth, and, when they have reached it, take root and produce new trunks. In this manner, immense and almost impenetrable forests are formed, which are filled with vast numbers of crabs, aquatic birds, mosquitos, &c. The seeds are remarkable for throwing out roots, which vegetate among the branches of the trees, while yet adhering to the foot-stalk. The soft part of the white mangrove is formed into ropes: the wood of the red mangrove is compact and heavy.

MA'NIOC (the Indian name of the *Jatropha manihot*), a shrub (the root of which is highly nutritious) indigenous to tropical America, and cultivated also in many parts of Asia and Africa. It grows rapidly, produces abundantly, and accommodates itself to almost every kind of soil. Every part of the plant is filled with a milky juice, which is a very violent and dangerous poison; and it may well excite surprise that human ingenuity should have converted the roots into an article of food. For this purpose the roots were formerly rasped with rough pieces of stone; but they are now ground in wooden mills, and the paste is put into sacks which are exposed for several hours to the action of a heavy press. By this means it is deprived of all the poisonous juice, and the residue is called *cassava*. The substance we call *tapioca* is also produced from the manioc root.

MANICHEES', in church history, a sect of Christian heretics in the third century, the followers of Manes, who made his appearance in the reign of the emperor Pro-



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NO MANORS, WITH ALL THEIR INCIDENTS AND FRANCHISES, HAVE BEEN GRANTED IN ENGLAND SINCE THE REIGN OF EDWARD THE THIRD.

bus; pretending to be the Comforter whom our Saviour promised to send into the world. He taught that there are two principles, or gods, coeternal and independent of each other; the first principle, or *light*, the author of all good: the second principle, or *darkness*, the author of all evil—a doctrine which he borrowed from the Persian magi.

MANIPULA'TION, a word signifying work done with the hands. It is used in pharmacy for the preparation of drugs; in chemistry, for the preparation of substances for experiments; and in animal magnetism, for the motion of the hands, by which the operator magnetizes his dupes.

MANIPU'LUS, in Roman antiquity, a body of infantry, consisting of two hundred men, and constituting the third part of a cohort.——Among physicians, the term *manipulus* signifies a handful of herbs or leaves, or so much as a man can grasp in his hand at once; which quantity is frequently denoted by the abbreviature M, or m.

MAN'NA, a miraculous kind of food which fell from heaven for the support of the Israelites in the wilderness, for the space of forty years.——*Manna*, in botany, a sweet juice or gum which flows from many trees and plants in Syria, and also in Calabria, where it exudes from two species of the ash. Its smell is strong, and its taste rather nauseously sweet. It is dissolved by water, and affords by distillation water, acid, oil, and ammonia. It is frequently employed in the *materia medica*, and forms a considerable article of commerce.

MANOM'ETER, or MAN'OSCOPE, an instrument to show or measure the alterations in the rarity or density of the air. The manometer differs from the barometer in this, that the latter only serves to measure the weight of the atmosphere, or of the column of air over it; but the former the density of the air in which it is found.

MAN'OR, an ancient royalty or lordship, formerly called a barony, consisting of demesnes, services, and a court-baron; and comprehending in it messuages, lands, meadow, pasture, wood, rents, an advowson, &c. It may contain one or more villages, or hamlets, or only a great part of a village, &c. In these days, a *manor* rather signifies the jurisdiction and royalty incorporeal, than the land or site; for a man may have a manor in gross, as the law terms it, that is, the right and interest of a court-baron, with the perquisites thereto belonging. There are capital manors or honours, that have other manors under them: and also customary manors granted by copy of court-roll, the lords of which have power to hold courts, and grant copies, &c. This was the origin of copyhold estates, viz. those held by copy of the roll of the court of the manor.

MAN'SLAUGHTER, in law, the unlawful killing a man without malice prepense. It differs from murder, in not being maliciously or deliberately done; and from excusable homicide, being done in some unlawful act, whereas excusable homicide happens in consequence of some misadventure.

MAN'TELET, in fortification, a kind of movable parapet, or wooden penthouse, used in a siege. Mantelets are cased with tin and set on wheels, so as to be driven before the pioneers, to protect them from the enemy's small shot.

MAN'TIS, in entomology, a sort of insect, of which there are numerous species, distinguished by the difference and singularity of their shape. The chief species in Europe is the camel cricket, or *praying* mantis, so called because when sitting it holds up its two fore-legs as if in the attitude of prayer; whence vulgar superstition has held it as a sacred insect; and a popular notion has prevailed, that a child or a traveller having lost his way, would be safely directed, by observing the quarter to which the animal pointed, when taken into the hand. The dry leaf mantis *(phyllium siccifolia)*, in its shape and colour is remarkable, invariably suggesting the idea of a dry and withered leaf. Their manners, also, in addition to their structure, assist in the delusion; as they often remain on trees for hours, without motion; then, suddenly springing into the air, they appear to be blown about as dry leaves. The mantis is of a predacious disposition, living on smaller insects, which it watches for with great anxiety: it is also quarrelsome, and when kept with others of its own species in a state of captivity, they will attack each other with the utmost violence, till one is destroyed.

MANT'LING, in heraldry, that appearance of folding of cloth, flourishing, or drapery, that is drawn about the coat of arms. It is supposed originally to have been the representation of a mantle, or military habit, worn by the cavaliers over their armour, to preserve it from rust.

MAN'UAL EX'ERCISE, in the military art, the exercise by which soldiers are taught the use of their muskets and other arms.

MAN'UFACTURE, the operation of reducing raw materials of any kind into a form suitable for use, either by the hands or machinery. Also any commodity made by the hand, or anything formed from the raw materials or natural productions of a country, as cloths from wool, and cotton or silk goods from the cotton and silk, &c.

MANUFACTURER, one who works up a natural product into an artificial commodity; or the person who employs workmen and machinery for that purpose.

MANUMIS'SION, among the Romans, the solemn ceremony by which a slave was emancipated, or liberated from personal bondage.

MANURE, any matter or substance, either vegetable, animal, or mineral, introduced with the soil, to accelerate vegetation, and increase the produce of crops; as the contents of stables and farm-yards, marl, ashes, lime, fish, salt, &c.

MAN'USCRIPTS, writings of any kind,

IN SOME PARTS OF INDIA A SPECIES OF MANTIS IS KEPT, LIKE GAME COCKS, FOR FIGHTING, WHICH THEY DO WITH GREAT FEROCITY.



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on paper, parchment, or any other material. There are many modes by which antiquarians are enabled to discover the probable date of a manuscript; and there are many which have at the end a statement when and by whom they were written, though this is not always to be relied on. Since we have had the evidence of the Herculaneum manuscripts, we can determine with certainty that none of our manuscripts are older than the Christian era. It was the custom, in the middle ages, wholly to obliterate and erase writings on parchment, for the purpose of writing on the materials anew. These *codices rescripti, vasi*, are thought great curiosities. In the 14th century, when paper came more into use, this custom was discontinued.——*Illuminated Manuscripts*, such as are adorned with paintings illustrating the text, or in which the initial letters are decorated with flourishes or gilding.

MAP, a delineation of a country, according to a scale, in which the proportion, shape, and position of places are exactly preserved. The top is usually the north, and the right hand the east, and, when otherwise, distinguished by a *fleur de lis* pointing to the north. It is called a *universal* map when it represents the whole surface of the earth, or the two hemispheres; and a *particular* map when it only represents particular regions or countries. A *map* is properly a representation of land, as distinguished from a *chart*, which only represents the sea or sea-coast. In maps, three things are essentially requisite: 1, that all places have the same situation and distance from the great circles therein, as on the globe, to show their parallels, longitudes, zones, climates, and other celestial appearances; 2, that their magnitudes be proportionable to their real magnitudes on the globe; 3, that all places have the same situation, bearing, and distance, as on the earth itself. The degrees of longitude are always numbered at top and bottom, and the degrees of latitude on the east and west sides.

MA'PLE, in botany, a tree of which there are numerous species, under the scientific name *acer*. The *acer saccharinum*, or sugar-maple, in North America, is one of the most remarkable species, from which, by tapping the trees early in the spring, the Americans procure a vast quantity of sugar, a tree of an ordinary size yielding in a good season from twenty to thirty gallons of sap. The wood of the common European maple is much used by turners, and on account of its lightness is frequently employed for musical instruments, particularly for violins.

MAPPA'RIUS, in Roman antiquity, the officer who gave the signal to the gladiators to begin fighting, which he did by throwing a handkerchief, that he had received from the emperor or other magistrate.

MARANATH'A, amongst the Jews, was a form of threatening, cursing, or anathematising, and was looked upon as the most severe denunciation they had. The word is said to signify *the Lord comes, or is come:* which, taken as a curse or threat, may be thus paraphrased, "the Lord come quickly to take vengeance on thee for thy crimes," the indicative mood being used for the optative. St. Paul uses the expression, 1 Cor. xvi. 22, pronouncing *anathema maranatha* on all that love not the Lord Jesus Christ.

MARAN'TA, in botany, a genus of plants, class 1 *Monandria*, order 1 *Monogynia*. The species are perennials, and among them is the *maranta arundinacea*, or Indian Arrow-root.

MARAS'MUS, in medicine, an atrophy or consumption; a wasting of flesh without fever or apparent disease.

MAR'BLE, in natural history, a genus of fossils; being bright and beautiful stones, composed of small separate concretions, moderately hard, not giving fire with steel, fermenting with and soluble in acid menstrua, and calcining in a slight fire. *Marble* is, in fact, the popular name of any species of calcareous stone or mineral, of a compact texture, and of a beautiful appearance, susceptible of a good polish. The varieties are numerous and greatly diversified in colour. It is much used for statues, busts, pillars, chimney-pieces, monuments, &c.

MAR'CASITE, a name (in scientific nomenclature now obsolete) which has been given to all sorts of minerals, to ores, pyrites, and semi-metals.

MARCH, the third month of the year, according to the calendar of Numa and Julius Cæsar; but in the calendar of Romulus it stood first, in honour of his reputed father, Mars. This month seems to have a strong claim to the first place in the series, because in March the sun enters into the sign Aries, which is reckoned the first sign of the zodiac.——*March*, in military affairs, the movement of a body of troops from one place to another; or the measured and regular pace of a soldier, according to a certain form and time.——In music, any piece adapted to a soldier's march.

MARCHES, borders or confines, particularly the boundaries between England and Wales. The office of the "lords marchers" was originally to guard the frontiers.

MARCO'SIANS, a sect of Christian heretics in the second century, so called from their leader Marcus, who represented the Deity as consisting not of a trinity, but a quaternity, *viz.* the Ineffable, Silence, the Father, and Truth.

MAR'GARATE, in chemistry, a compound of margaric acid with a base.

MARGAR'IC, in chemistry, an epithet for an acid which appears in the form of pearly scales, and is obtained by digesting soap made of hog's lard and potash, in water. It is also called *margarine*.

MAR'GODE, in mineralogy, a bluish gray stone resembling clay in external appearance, but so hard as to cut spars and zeolites.

MARGRA'VIATE, the territory or jurisdiction of a *margrave*, originally a lord or



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keeper of the marches or borders, but now a title of nobility in Germany, &c.

MAR'IGOLD, in botany, a plant of the genus *Calendula*, bearing a yellow flower. There are several plants of different genera bearing this name; as the *African marigold*, of the genus Tagetes; *corn marigold*, of the genus Chrysanthemum; *marsh marigold*, of the genus Caltha, &c.

MARI'NE, pertaining to the sea, as marine productions, &c. Also a general name for the navy of a kingdom or state, comprehending likewise all that relates to naval affairs, as the building, rigging, arming, equipping, navigating, and employing ships.

MARINE REMAINS', the shells of seafish, found on digging below the earth's surface, in nearly all situations and countries, and in some in solid beds of great depth, and covering very extensive tracts. In truth, many naturalists have supposed that rocks of phosphate and carbonate of lime are composed entirely of their remains. They are found at various depths with intervening land remains, generally in three strata, one above the other, serving to prove that the bed of the sea had been at three distinct remote times in those positions, and for long periods. The species of remains thus discovered are of animals which either do not exist at present, or are only found in remote seas.

MARI'NES, soldiers raised for naval service, and trained to fight either on shipboard, or in an action on land.

MARK, or *the Gospel of* St. MARK, a canonical book of the New Testament, the second in order. St. Mark wrote his gospel at Rome, where he accompanied St. Peter, in the year of Christ 44. Tertullian, and others, pretend that St. Mark was no more than an amanuensis to St. Peter, who dictated this gospel to him; others assert that he wrote it after St. Peter's death. Nor are the learned less divided as to the language this gospel was written in; some affirming it to have been in Greek, and others in Latin. It however seems plainly intended for Christian converts from paganism, and is distinguished from the other evangelical writings by its brevity, passing over much that relates to the character of Christ as Messiah.

——*Mark*, a money of account, or a coin. The English mark is two-thirds of a pound sterling, or 13*s.* 4*d.*

MARL, a species of calcareous earth, being a mixture of carbonate of lime and clay, used in agriculture for enriching barren land, and valuable according to the proportion of lime which it contains. All solid marls crumble by exposure to the atmosphere, usually in the course of a year. Like clay, it belongs both to secondary and alluvial earths, where it occurs in masses or in beds; hence it is found associated with compact limestone, or with sand and clay. It contains various organic remains, as shells, fish, bones of birds and of quadrupeds, and sometimes vegetables.

MAR'LINES, a sea term for lines of untwisted hemp well tarred, to keep the ends of the ropes, &c. from unravelling.——*Marline-spike*, a small iron spike, used to open the bolt rope when the sail is to be sewed to it, &c.

MAR'MALADE, the pulp of quinces boiled into a consistence with sugar; or a confection of pluma, apricots, quinces, &c. boiled with sugar.

MAR'MALITE, a mineral of a metallic or pearly lustre: a hydrate of magnesia.

MAR'MOSE, in zoology, an animal resembling the opossum, but smaller. Instead of a bag, the marmose has two longitudinal folds near the thighs, which serve to inclose their young.

MAR'MOT, in zoology, a quadruped of the genus *Arctomys*, allied to the murine or rat tribe. It is about the size of a rabbit, and inhabits the higher region of the Alps and Pyrenees. When these animals (which live in societies) are eating, they post a sentinel, who gives a shrill whistle on the approach of any danger, and they all retire into their burrows, which are well lined with moss and hay. In these retreats they remain, in a torpid state, from the autumn till April. There are several other species of the genus, and among them is the *woodchuck* or *ground hog*, and the *wistonwish* or *prairie dog*, of North America.

MAROONS', the name given to revolted negroes in the West Indies and in some parts of South America. In many cases, by taking to the forests and mountains, they have rendered themselves formidable to the colonies, and sustained a long and brave resistance to the white population.

MARQUE, *letter of*, a power granted by a state to its subjects, to make reprisals on the subjects of a state with whom it is at war.

MAR'QUIS, or MAR'QUESS, a title of honour, next in dignity to that of duke, first given to those who commanded the marches, or borders and frontiers of a kingdom. Marquisses were not known in England till Richard II. in the year 1337, created Robert de Vere marquis of Dublin. The formal title given to a marquis in writing, is "most noble, most honourable, and potent prince." The marquis's coronet is a circle of gold set round with four strawberry leaves, and as many pearls on pyramidal points of equal height alternate.

MAR'RIAGE, a contract both of a civil and religious nature, between a man and a woman, by which they engage to live in mutual love and fidelity till death shall separate them—a bond of connexion which was instituted by God himself for the purpose of preventing the promiscuous intercourse of the sexes, for promoting domestic felicity, and for securing the maintenance and education of children. The Jews looked upon the words "be fruitful and multiply," as containing an indispensable injunction to enter into this state; and the man, whose daughter was not married before the age of twenty, was looked upon as accessary to any irregularities she might be guilty of. In almost all nations, the day of marriage is celebrated with religious ceremonies; and surely nothing is more natural than to pray





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for the blessing of Heaven on such a union. With the most ancient inhabitants of the East, the bride was obtained by presents made, or services rendered, to her parents; and to this day the same practice prevails among the Circassians, and the poorer Turks and Chinese.——Both men and women, among the Athenians, cut off their hair before marriage, and consecrated it to some god or goddess, under whose protection they had more immediately placed themselves; and all virgins, before they could enter upon that state, were consecrated to Diana. Previous to the actual marriage of the parties contracted, sacrifices were offered up, and the gall of the victim was always thrown behind the altar, intimating that anger and malice should have no admission. Among the Romans there was no particular age determined for marriage, but all espousals were to be consummated by the nuptials within two years. The man always, at the time of entering into contract, sent a plain iron ring to the woman, as a pledge of affection. The ancient Christian church laid several restraints upon her members in relation to marriage; such was the rule forbidding Christians to marry with infidels and heathens: another restraint related to the consanguinity and affinity prohibited in Scripture: a third was, that children under age should not marry without the consent of their parents, guardians, or next relations: and another was, that there should be some parity of condition between the contracting parties.——In conclusion, we must notice, that according to a recent act of parliament, the holy rite of marriage has in this country been made a mere civil contract.

MARS, in astronomy, one of the superior planets, moving round the sun in an orbit between those of the earth and Jupiter. Mars appears to move from west to east round the earth, his periodical motion round the sun is in 687 days nearly. His apparent motion is very unequal, and he moves about his axis in little more than one of our days and nights.

MARSH, a tract of low land, usually or occasionally covered with water, or very wet and miry, and overgrown with coarse grass and sedges. Land occasionally overflowed by the tides, is called a *salt marsh*.

MAR'SHAL, in its primary signification, means an officer who has the command or care of horses; but it is now applied to officers who have very different employments. ——*Marshal of the King's* [*Queen's*] *Bench*, an officer who has the custody of that prison in Southwark. This officer is obliged to give his attendance, and to take into custody all persons committed by that court. ——*Marshal of the Exchequer*, an officer to whom that court commits the king's debtors.——*Field-marshal*, a military officer of the highest rank.——*Earl marshal*, the eighth officer of state: an honorary title, and personal, until made hereditary by Charles II. in the family of Howard.——In the United States of America, a *marshal* is a civil officer, appointed by the president and senate, in each judicial district; answering to the sheriff of a county in England.

MAR'SHALLING, in heraldry, is the arranging of several coats of arms belonging to distinct families, in one escutcheon or shield, together with their ornaments, &c. Also the disposing of persons at public solemnities in their proper places.

MAR'SHALSEA, a prison in Southwark. A court originally instituted to hear and determine causes between the servants of the king's household and others within the verge of the court, that is, within twelve miles round Whitehall.

MARSUPRA'LIS, in anatomy, a muscle of the thigh so named from the doubling of its tendons, which resemble a purse.

MARTEL'LO TOW'ERS, a number of towers erected on an open part of the Kentish coast, at intervals of about a quarter of a mile, as a defence against the threatened invasion of France in the palmy days of Buonaparte. They are circular, with very thick walls, and bomb-proof roofs. One traversing gun was mounted on each, in working which the men were secured by a lofty parapet. They derived their name (though corrupted) from *Mortella*, in Corsica, where a strong tower maintained a determined resistance to the English force in 1794. These towers have since served as stations for the use of the coast blockade force.

MAR'TEN, in zoology, an animal of the genus *Mustela*, or weasel tribe; one of the prettiest of the beasts of prey which is found in Great Britain. It has a small head, an agile body, and lively eyes. These animals are very destructive to poultry, eggs, &c.; they also feed on rats, mice, moles, and sometimes on grain. The pine marten (*mustela martio*) inhabits the woods of North America, and is much esteemed for its fur, which is used for trimmings. About 100,000 skins of the animal are said to be annually collected in the fur countries.

MAR'TIN, in ornithology, a bird of the genus *Hirundo*, which forms its nest in buildings.

MARTINETS, in a ship, small lines fastened to the leech of a sail, reeved through a block on the top-mast head, and coming down by the mast to the deck. Their use is to bring the leech of the sail close to the yard to be furled.——In military language, a *martinet* signifies a strict disciplinarian.

MAR'TINGALE, in the manege, a thong of leather fastened at one end of the girths under the belly of the horse, and at the other end to the musrole, passing between the fore legs.——Also, a sea term for a rope extending from the jib-boom to the end of the bumkin.

MART'LETS, in heraldry, little birds represented without feet, and used as a difference or mark of distinction for younger brothers; to put them in mind (as it has been rather quaintly said) that they are to trust to the wings of virtue and merit, in order to raise themselves, and not to their



MARRIES ARE FATAL TO HEALTH IN HOT COUNTRIES, OWING TO THEIR FERMENTING, AND EVOLVING A GREAT QUANTITY OF PUTRID MATTER.

MARVIES BUILD THEIR NESTS IN SUCH AN ASPECT AS WILL BE SECURE FROM THE SUN, LEST ITS HEAT SHOULD CRACK OR DESTROY THEM.

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PRAYERS AND TEARS MAY SERVE A GOOD MAN'S TURN; IF NOT TO CONQUER AS A SOLDIER, YET TO SUFFER AS A MARTYR."—KING CHARLES.

THE ANCIENT SOCIETIES OF MASONS ERECTED, IN ALL COUNTRIES OF EUROPE, THOSE STUPENDOUS SPECIMENS OF ARCHITECTURE WE CALL GOTHIC.

feet, they having little land to set their foot on.

MAR'TYR, any innocent person who suffers death in defence of a cause, rather than abandon it. In the Christian sense of the word, it is one who lays down his life for the Gospel, or suffers death for the sake of his religion. The Christian church has abounded in martyrs, and history is filled with surprising accounts of their singular constancy and fortitude under the most cruel torments human nature was capable of suffering. The primitive Christians believed that the martyrs enjoyed very singular privileges: that upon their death they were immediately admitted to the beatific vision, while other souls waited for the completion of their happiness till the day of judgment; and that God would grant chiefly to their prayers the hastening of his kingdom, and shortening the times of persecution. The festivals of the martyrs are of very ancient date, and may be carried back at least till the time of Polycarp, who suffered martyrdom about the year of Christ 168. On these days the Christians met at the graves of the martyrs, and offered prayers and thanksgivings to God for the examples they had afforded them: they celebrated the eucharist, and gave alms to the poor; which, together with a panegyrical oration or sermon, and reading the acts of the martyrs, were the spiritual exercises of these anniversaries.

MARTYROL'OGY, a catalogue or list of martyrs, including the history of their lives and sufferings.

MA'SONRY, that branch of the building art which consists in hewing or squaring stones, &c., and of properly laying them.

MA'SONS, or FREE AND ACCEPTED MASONS, a term applied to a fraternity of great antiquity, and so called probably because the first founders of that society were persons of that craft or occupation. It is generally understood that they are bound by an oath of secrecy not to reveal any thing that passes within the society, and the members throughout the whole world are known to each other by certain secret signs. Like any other society founded on general principles, and, at the same time, well organized, it has at particular times been subservient to the production of much good, and at others of much evil, according to the different purposes for which it has been employed; and, like every other society of any magnitude, it has been the object of hyperbolical encomium from its friends, and obloquy from its enemies. It professes to be founded on the practice of social and moral virtue, and inculcates "brotherly love, relief, and truth."

MASQUE, a theatrical drama, or gorgeous histrionic spectacle, much in favour of the courts of princes, during the 16th and 17th centuries. According to Holinshed's Chronicle, the first masque performed in England was in 1510, in the first year of Henry VIIIth's reign. Shakspeare, as well as Beaumont and Fletcher, have frequently introduced masques into their plays. James I. carried the glory of the masque to its height. It had before consisted of music, dancing, gaming, a banquet, and a display of grotesque personages and fantastic dresses; but it now assumed a higher character, and became "married to immortal verse." Previously, "their chief aim," says Warton, "seems to have been to surprise by the ridiculous and exaggerated oddity of the visors, and the singularity and splendour of the dresses."——In architecture, certain pieces of sculpture representing hideous forms, which serve to fill up vacant spaces.

MASQUERA'DE, an exhibition in which persons, wearing masks, meet together, and represent different characters.

MASS, in the church of Rome, the prayers and ceremonies used at the celebration of the eucharist; or, in other words, consecrating the bread and wine into the body and blood of Christ, and offering them; so transubstantiated, as an expiatory sacrifice for the quick and the dead. As the mass is believed to be a representation of the passion of our blessed Saviour, so every action of the priest, and every particular part of the service, is supposed to allude to the particular circumstances of his passion and death. The general division of masses consists in high and low; *high mass* is sung by the choristers, and celebrated with the assistance of a deacon and sub-deacon; *low masses* are those in which the prayers are barely rehearsed without singing. There are a great number of different or occasional masses in the Romish church, many of which have nothing peculiar but the name: such are the masses of the saints, &c.——*Mass priest*, the name for priests who are kept in chantries or at particular altars, to say so many masses for the souls of the deceased.

MAS'SACRE, the indiscriminate slaughter of human beings, without authority or necessity, and without forms civil or military.

MAS'SETER, in anatomy, a muscle which has its origin in the lower and interior part of the *jugum*, and its end at the external superficies of the angle of the jaw.

MAS'SIVE, in mineralogy, having a crystaline structure, but not a regular form. ——Among builders, *massive* is an epithet given to whatever is particularly heavy and solid: thus a massive column is one too short and thick for the order whose capital it bears, &c.

MASSO'RA, or MASO'RA, a critical work amongst the Jews, containing remarks on the verses, words, letters, and vowel points of the Hebrew text of the Bible. The Jewish rabbis or doctors who drew it up, were called *Massorites*. Before that time the sacred books had no breaks or divisions into chapters or verses; and in consequence of the errors which had crept in during the Babylonish captivity, it was found necessary to ascertain and fix the reading of the Hebrew text; which they did, and also divided the canonical books into twenty-two, and these twenty-two books into chapters, and the chapters into verses.



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MAST, a long, upright piece of timber, raised from the keel, through the deck of a vessel, to which the yards, sails, &c. are fixed; the whole being supported by an ingenious combination of ropes, adapted to ascend for the purpose of adjusting the sails. The mainmast is the largest mast in the ship, and in large ships is divided into lower, top, and top-gallant; the foremast is the next in size, standing near the stem of the ship; the mizenmast, the smallest of the three, stands between the mainmast and the stern.

MASTER, in law, the name of several officers who preside in their several departments; as *Master of the faculties*, an officer under the archbishop of Canterbury, who grants licenses and dispensations.——*Master of the horse*, an officer of the crown, who has the charge of the royal stud, and directs the equerries and other officers attached to that part of the regal establishment.——*Master of the armoury*, one who has the charge of the royal armour.——*Master of the wardrobe*, an officer under the lord chamberlain, who has the care of the royal robes.——*Master of the rolls*, a patent officer for life, who has the custody of the rolls of parliament and patents which pass the great seal, and of the records of chancery, commissions, deeds, &c. In the absence of the chancellor he sits as judge in the court of chancery; at other times he hears causes in the Rolls-chapel, and makes orders.——*Masters in chancery*, assistants to the lord chancellor and master of the rolls. There are twelve in ordinary; besides extraordinary masters; of the former some sit in court every day during term, and have business, as it arises, referred to them, such as interlocutory orders for stating accounts, and computing damages, and the like. The masters extraordinary are appointed to act in the country, in the several counties in England, beyond ten miles distance from London, by taking affidavits, recognizances, acknowledgments of deeds, &c. for the ease of suitors of the court.——*Master of arts*, the second degree taken up at Cambridge and Oxford, to which candidates are not admitted until they are past seven years standing. In the foreign and Scotch universities this is the first degree.——*Master of a ship*, the same with captain in a merchant-man; but in a king's ship he is an officer who inspects the provisions and stores, takes care of the rigging and ballast; and navigates the ship under the directions of his superior officer.——*Master at arms*, in a king's ship, he who has charge of the small arms, and exercises the petty officers, &c.

MASTIC, or MASTICH, a solid and transparent resin, of a pale yellow or whitish colour, principally brought from the island of Chios, in drops or tears, as it naturally forms itself in exuding from the mastic tree (a species of *Pistacia*) about the size and form of a pea. It should be clear, pellucid, and of a pale yellowish colour, well scented, and brittle. In medicine it is used as an astringent and aromatic. It is also used as an ingredient in drying varnishes. Mastic is consumed in vast quantities in Turkey, and is there used as a masticatory by women of all denominations, for the purpose of cleansing the teeth and imparting an agreeable odour to the breath.——*Asphaltic Mastic*, is a compound of carbonate of lime and mineral pitch, which is obtained from Pyrmont, near Seysell, and brought down the Rhone. After being roasted on an iron plate it falls to powder, in which state it is mixed with about seven per cent. of a bitumen, or mineral pitch, found near the same spot. This appears to give ductility to the mastic, and the addition of only one per cent. of sulphur makes it exceedingly brittle. The powdered asphaltic is added to the bitumen when in a melting state; also a quantity of clean gravel, to give it a proper consistency for pouring into moulds. When laid down for pavement, small stones are sifted on. It is so elastic, that (according to the account given of it in the Railway Magazine) it may be considered a species of mineral leather, on which the sun and rain appear to have no effect.

MASTIFF, in zoology, a variety of the canine race, having a large head, with dependent lips and ears, and distinguished by his vigilance, strength, and courage. English mastiffs were held in such high estimation at Rome, that an officer was appointed for the purpose of breeding them, and sending to the imperial city such as he thought capable of sustaining the combats in the amphitheatre.

MASTODON, in natural history, an extinct genus of mammiferous animals resembling the elephant and mammoth, but found only in a fossil state. There are no traces within the period of tradition or history of their existence.

MASTOID, in anatomy, an epithet for those processes of bone which resemble the nipple of a breast.

MASTOL'OGY, that branch of zoology which treats of mammiferous animals.

MATADORE, one of the three principal cards in the games of ombre and quadrille, which are always two black aces and the deuce in spades and clubs, and the seven in hearts and diamonds.

MATE, an assistant officer to the captain of a merchant vessel, or to a surgeon on shipboard. Large ships have a first, second, and third mate.

MATERIALISM, the doctrine held by those who maintain that the soul of man is not a spiritual substance distinct from matter, but that it is the result or effect of the organization of matter in the body. This theory, however, does not explain how matter can think, and how physical motion can produce mental changes, which we do not observe in so many organic beings. In decided opposition to materialism, is our consciousness of the identity and liberty of man, which would be annihilated by it, because matter is governed by the necessity of nature, and free will therefore excluded.

"AN UNHAPPY MASTER IS HE THAT IS MADE CUNNING BY MANY SHIPWRACKS; A MISERABLE MERCHANT, THAT IS NEITHER RICH NOR WISE."—ASCHAM.

"MASTERS AND TEACHERS SHOULD NOT RAISE DIFFICULTIES TO THEIR SCHOLARS; BUT SMOOTH THEIR WAY, AND HELP THEM FORWARDS."—LOCKE.

NOTHING EXPANDS THE MIND MORE THAN THE ACQUISITION OF A MATHEMATICAL TRUTH, A LAW OBSERVED THROUGHOUT THE UNIVERSE.

**MATE'RIA MEDI'CA**, a term used to denote all those substances which are employed in the prevention of diseases and the restoration of health.

**MATHEMATICS**, the science which treats of magnitude and number, or of whatever can be measured or computed. It is divided into *pure* and *speculative*, which consider quantity abstractedly; and *mixed*, which treats of magnitude as subsisting in material bodies, and is consequently interwoven with physical considerations. *Mixed mathematics* are very comprehensive; since to them may be referred astronomy, optics, geography, hydrography, hydrostatics, mechanics, fortification, navigation, &c. Not only all objects of the bodily world, but also time, powers, motion, light, tones, &c. may be represented and treated as mathematical magnitudes. Dr. Barrow observes, "that the mathematics effectually exercise, but never vainly delude, nor vexatiously torment studious minds with obscure subtilties; but plainly demonstrate every thing within their reach, draw certain conclusions, instruct by profitable rules, and unfold pleasant questions. While they inure the mind to a constant diligence in study, they deliver us from a credulous simplicity, fortify us against the vanity of scepticism, restrain us from a rash presumption, and perfectly subject us to the government of right reason. While the mind is abstracted and elevated from sensible matter, it distinctly views pure forms, conceives the beauty of ideas, and investigates the harmony of proportions; the manners themselves are sensibly corrected and improved, the affections composed and rectified, the fancy calmed and settled, and the understanding raised and excited to more divine contemplations."

**MATINS**, the first part of the daily service, particularly in the Romish church.

**MATRA'LIA**, in antiquity, a Roman festival celebrated by the matrons, in honour of the goddess Mater Matuta, on the third of the ides of June.

**MATRASS**, or **CUCURBIT**, a long straight-necked chemical glass vessel used for digestion and distillation, being sometimes bellied, and sometimes gradually tapering into a conical figure.

**MATRICE**, a mould, or whatever gives form to anything; as in printing, the mould or form in which the type or letter is cast. ——In coining, the piece of steel on which are engraved the figures, arms, &c. with which the coin is to be stamped.

**MATRICULATION**, the act of admitting any person to be a member of an English university.

**MA'TRIX**, the bed or mould of earth, &c. in which any mineral substance is found.

**MATRONA'LIA**, a Roman festival instituted by Romulus, and celebrated on the calends of March, in honour of Mars. It was kept by matrons, to whom presents were made by the men, as by husbands to their wives, &c. Bachelors were entirely excluded from any share in the solemnity.

**MATROSS'**. Matrosses are soldiers in a train of artillery, who are next to the gunners, and assist them in loading, firing and sponging the guns. They carry fire-locks, and march with the store waggons as guards and assistants.

**MATTER**, that which is the object of our senses, the distinguishing property of which is its *vis inertiæ*, or power of resisting any attempts to make it change its state. Matter is usually divided by philosophical writers into four kinds or classes: solid, liquid, aeriform, and imponderable. *Solid* substances are those whose parts firmly cohere or resist impression, as wood or stone; *liquids* have free motion among their parts, and easily yield to impression, as water and wine. *Aeriform* substances are elastic fluids, called vapours and gases, as air and oxygen gas. The *imponderable* substances are destitute of weight, as light, caloric, electricity, and magnetism.

**MATTH'EW**, or *Gospel of St. Matthew*, a canonical book of the New Testament. St. Matthew wrote his gospel in Judæa, at the request of those he had converted, and it is thought he began it in the year 41, eight years after Christ's resurrection. It was written, according to the testimony of all the ancients, in the Hebrew or Syriac language, which was then common in Judæa but the Greek version of it, which now passes for the original, is as old as the apostolical times. St. Matthew's view in writing his gospel, was chiefly to show the royal descent of Jesus Christ, and to represent his life and conversation among men.

**MATURANT**, in pharmacy, a medicine or application to a tumour, which promotes suppuration.

**MAUL'STICK**, a painter's stick, on which he rests his hand when he paints.

**MAUND**, (in archæology) a great basket or hamper, containing eight bales. Also, a weight used in India.

**MAUN'DAY THURSDAY**, the Thursday in passion-week, or next before Good Friday. The word is supposed by some to be derived from the Saxon *mand*, a basket; because on that day princes used to give alms to the poor from their baskets. Others think it was called *Maunday* or *Mandate* Thursday, from the *dies mandati* (the day of command), the command which Christ gave his disciples to commemorate him in the Lord's supper, which he this day instituted; or from the new commandment that he gave them to love one another, after he had washed their feet as a token of his love to them.

**MAUSOLE'UM**, a general designation of any superb and magnificent monument of the dead, adorned with rich sculpture, and inscribed with an epitaph. In a more confined acceptation it signifies the pompous monument in honour of some emperor, prince, or very illustrious personage; but it properly and literally signifies that particular monument built by Artemisia, to the memory of her husband Mausolus, king of Caria, whence it derives its name. This monument was so superb that it was reckoned one of the wonders of the world.

IN ANCIENT TIMES, POWERS, NOT UNLIKE THE SOUL, WERE CONCEIVED TO EXIST IN MATTER, BY MEANS OF WHICH IT OPERATED ON THE MIND.



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MAXIL'LA, in anatomy, the jaw-bone, which is either the *maxilla superior*, or *inferior*. The jaws are shorter in the human frame than in that of any other animal, in proportion to the size of the body; and this is a circumstance that adds greatly to the beauty of the face. The *maxilla superior*, or upper jaw, is composed of thirteen bones, twelve of which are in pairs. The *maxilla inferior*, or lower jaw, is that movable bone of the head which contains the lower series of teeth.

MAXIL'LARY, in anatomy, an epithet for what belongs to the jaw-bones, as the maxillary arteries, muscles, veins, &c.

MAX'IMUM, in mathematics, the greatest quantity attainable in any case: opposed to *minimum*.——In commerce, the highest price of any article, as fixed by law or regulation.

MAX'IM, an established proposition or principle; in which sense, according to popular usage, it denotes nearly the same as *axiom* in philosophy and mathematics. Maxims are self-evident propositions, and the principles of all science; for on these, and definitions, all demonstrative knowledge depends.

MAY, the fifth month in the year, reckoning from January; and the third, beginning with March, as was the ancient practice of the Romans. This month derives its name from Maia, the mother of Mercury, to whom they offered sacrifice on the first day of it; and on the 4th of the calends of May, the Romans held their *Floralia*, or festival in honour of Flora. Mr. Borlase says: "May customs are nothing more than a gratulation of the spring, to testify universal joy at the revival of vegetation." And Mr. Douce observes, "that there can be no doubt that the queen of May is the legitimate representative of the goddess Flora, in the Roman festival." It was anciently the custom for all ranks of people to go out a maying, early on the first of May; nor is this custom wholly extinct in some parts of England at the present day, though it may be accounted somewhat "ungentel." Bourne tells us that in his time, in the villages of the north of England, the juvenile part of both sexes were wont to rise a little after midnight on the morning of that day, and walk to some neighbouring wood, accompanied with music and the blowing of horns, where they broke down branches from the trees, and adorned them with nosegays and crowns of flowers. This done, they returned homewards with their booty, about the time of sun-rise, and made their doors and windows triumph in the flowery spoil.—We need not inform those who are acquainted with our south-western counties (Hampshire more especially), that among all the rustic revelries there known, the village "maying" is pre-eminent. We well remember what happy groupes were wont to assemble on such occasions, to join the merry dance, or mingle with the crowd of practical jokers: nay, so vividly is the scene painted on the retina of our memory, that had not the incomparable author of "Our Village" already sketched it to the life, we might have been tempted to do it even here—less graphically we are sure, and, in all probability, not more correctly: so without farther preface, we introduce it:—"Here we are at the Green; a little turfy spot, where three roads meet, close shut in by hedge-rows, with its pretty white cottage, and its long slip of a garden at one angle. I had no expectation of scenery so compact, so like a glade in a forest; it is quite a cabinet picture, with green trees for the frame. In the midst grows a superb horse-chesnut, in the full glory of its flowery pyramids, and from the trunk of the chesnut the May-houses commence. They are covered alleys built of green boughs, decorated with garlands and great bunches of flowers, the gayest that blow—lilacs, Guelder-roses, peonies, tulips, stocks—hanging down like chandeliers among the dancers; for of dancers, gay, dark-eyed young girls in straw bonnets and white gowns, and their lovers in their Sunday attire, the May-houses were full. The girls had mostly the look of extreme youth, and danced well and quietly like ladies—too much so: I should have been glad to see less elegance and more enjoyment; and their partners, though not altogether so graceful, were as decorous and as indifferent as real gentlemen. It was quite like a ball-room, as pretty and almost as dull. Outside was the fun. It is the outside, the upper gallery of the world, that has that good thing. There were children laughing, eating, trying to cheat, and being cheated, round an ancient and practised vender of oranges and gingerbread; and on the other side of the tree lay a merry groupe of old men, in coats almost as old as themselves, and young ones in no coats at all, excluded from the dance by the disgrace of a smock-frock. Who would have thought of etiquette finding its way into the May-houses! That groupe would have united Teniers; it smoked and drank a little, but it laughed a great deal more. There were a few decent matronly looking women, too, sitting in a cluster; and young mothers strolling about with infants in their arms: and ragged boys peeping through the boughs at the dancers; and the bright sun shining gloriously on all this innocent happiness. Oh, what a pretty sight it was!"

MAY'-FLY, in entomology, an insect called a water-cricket, which turns to a fly in the month of May, and is used as a bait in fishing, especially for trout.

MAYOR, the chief magistrate of a city, who, in London and York, is called lord-mayor. [See COMMON COUNCIL.]

MEAD, an agreeable sweet kind of wine, made of honey and water boiled and fermented.

MEAD'OW, in its general signification, means pasture or grass-land, annually mown for hay; but it is more particularly applied to lands that are too moist for cattle to graze upon in winter, without spoiling the sward. In America, the word *meadow* is applied particularly to the low ground on the banks of rivers, consisting of a rich



"A WRITER WHO APPREHENDS THAT HE SHALL NOT ENFORCE HIS OWN MAXIMS BY HIS DOMESTIC CHARACTER, SHOULD CONCEAL HIS NAME."—JOHNSON.

KING RICHARD THE FIRST, IN 1189, CHANGED THE TITLE OF THE CHIEF MAGISTRATE OF LONDON FROM BAILIFF TO THAT OF MAYOR.

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IN PROPORTION AS FRICTION IS REMOVED, WE OBSERVE A TENDENCY IN MOTIONS TO BECOME MORE AND MORE PERMANENT AND UNIFORM.

mould or an alluvial soil, whether grass land, pasture, tillage, or wood land.

MEAD'OW-ORE, in mineralogy, conchoidal bog iron ore.

MEAD'OW-SWEET, in botany, a plant of the genus *Spiræa*, with crumpled leaves, something like those of the elm, growing in meadows. Its flower expands in the form of a rose.——*Meadow-rue*, a plant of the genus *Thalictrum*.——*Meadow-saffron*, a plant of the genus *Colchicum*.——*Meadow-saxifrage*, a plant of the genus *Peucedanum*.

MEAN, a middle state; called *arithmetical*, when it is half the sum of two extremes; *geometrical*, when it is the square root of the product of two extremes; and *harmonical*, when it is proportional to the sum of the two extremes.——*The mean distance of a planet from the sun*, in astronomy, is the right line drawn from the sun, to the extremity of the conjugate axis of the ellipsis the planet moves in; and this is equal to the semi-transverse axis, and is so called, because it is a mean between the planet's greatest and least distance from the sun.——*Mean motion*, that whereby a planet is supposed to move equally in its orbit, and is always proportional to the time.——*Meantime*, or *equal time*, that which is measured by an equable motion, as a clock.

ME'ASLES, in medicine (*rubeola*) a disorder incident to children, consisting of a fever, attended with inflammation, cough, and difficulty of breathing. Persons of all ages are liable to its attacks; but it is more common in young children, and rarely affects an individual a second time. The symptoms are hoarseness, cough, drowsiness, and, about the fourth day, an eruption of small red spots. Even when violent, the measles are not often of a putrid tendency, although such a disposition sometimes prevails. In the case of the simple measles, the best treatment is abstinence from food, and the use of mild, mucilaginous, sweetened drinks.

MEAS'URE, any given quantity by which the length, breadth, thickness, and capacity of other things may be estimated, or proportioned, for the ease, convenience, and regulation of trade and commerce. Formerly, every province, and almost every place of importance had its own measures, which proved a most perplexing hindrance to commercial intercourse. In modern times many attempts at uniformity have been made in the United Kingdom; till at length, by an act of parliament, which came into operation Jan. 1, 1826, the standard London measures and weights were declared to be the standard for weights and measures throughout the realm. This act was called the "act of uniformity;" and the system thus established, the *imperial* system.——*Measure*, in geometry, any certain quantity assumed as one, or unity, to which the ratio of other similar quantities is expressed; thus the measure of a line is the extension of a right line at pleasure, which is to be considered as unity, as an inch, a foot, or a yard.——*Measure*, in music, the interval or space of time which the person who beats time takes between the rising and falling of his hand, in order to conduct the movement sometimes quicker and sometimes slower, according to the music or subject that is to be sung or played.——*Measure*, in poetry, a certain number of syllables metrically measured.

MECHAN'ICS, that branch of practical mathematics which treats of the effects of powers or moving forces, and applies them to machines and engines. The term mechanics is also equally applied to the doctrine of the equilibrium of powers, more properly called statics, and to that science which treats of the generation and communication of motion, which constitutes mechanics, strictly so called. The knowledge of mechanics is one of those things that serves to distinguish civilized nations from savage. It is by this science, that the utmost improvement is made of every power and force in nature; and the motions of the elements, water, air, and fire, rendered subservient to the various purposes of life: for, however weak the force of man appears to be when unassisted by this art, yet, with its aid, there is hardly any thing above his reach. It is distinguished, by Sir Isaac Newton, into practical and rational mechanics; the former of which treats of the mechanical powers; the latter of the whole theory of motion. The *mechanical powers* are six simple machines to which all others, how complex soever, may be reduced, and of the assemblage whereof they are all compounded; these are the *simple lever*, the *wheel* and *axis*, the *pulley*, the *inclined plane*, the *wedge*, and the *screw*. The forces which may be employed to give motion to machines are called *mechanical agents*, or *first movers*. They are water, wind, steam, gunpowder, and the strength of man and other animals. *Water* acts by its weight, and by the velocity which it acquires from falling, in consequence of its weight. *Wind* acts by its volume or mass and its velocity. Both these agents are variable, and both act in a straight line. *Heat*, as given out by combustible materials, produces steam, or gas, or gives motion to air by making it lighter, and thus causing it to rise. *Steam*, as usually employed, generates motion, which is alternately in one direction and the opposite. The *strength of animals* is commonly made to act upon some centre of resistance, by drawing, pushing, or pressing, and produces variable motions, naturally in a straight line, but often in a curve. The motions or pressures produced by all these agents are capable of being compared with those produced by weights. They might all be referred to a common standard, the unit of which should be the force required to raise a given weight a certain number of feet in a given line.

MECHO'ACAN, White Jalap, the root of an American species of *Convolvulus*, from Mechoacan, in Mexico; a purgative of slow operation, but safe.

MECO'NIATE, in chemistry, a salt consisting of meconic acid and a base.——*Meconic acid*, an acid contained in opium.

IN MANY PROCESSES OF THE ARTS, AND IN ALL CIRCULAR MOTIONS OF MACHINERY, ADVANTAGE IS TAKEN OF THE CENTRIFUGAL FORCE.



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MEDALS VARY IN PRICE ACCORDING TO THEIR RARITY AND PRESERVATION, THE PURITY OF THE METAL, AND THE BEAUTY OF THE WORKMANSHIP.

MED'AL, a piece of metal in the form of a coin, intending to convey to posterity the portrait of some great person, or the memory of some illustrious action. The parts of a medal are the two sides, one of which is called the face or head, and the other the reverse. On each side is the area, or field, which makes the middle of the medal; the rim, or border; and the exergue, or plain circular space just within the edge: and on the two sides are distinguished the type, or the figure represented, and the legend, or inscription. Egyptian medals are the most ancient; but the Grecian medals far excel all others in design, attitude, strength, and delicacy. Those of the Romans are beautiful, the engraving fine, the invention simple, and the taste exquisite. They are distinguished into consular and imperial: the consular medals are the most ancient, though the copper and silver ones do not go farther back than the 484th year of Rome, and those of gold no farther than the year 546. Among the imperial medals, a distinction is made between those of the upper and lower empire. The first commenced under Julius Cæsar, and continued till A.D. 260: the lower empire includes a space of nearly 1200 years, and ends with the taking of Constantinople. The use of medals is very considerable: they often throw great light on history, in confirming such passages as are true in old authors, in reconciling such as are variously narrated, and in recording such as have been omitted. In this case a cabinet of medals may be said to be a body of history. It was, indeed, an excellent way to perpetuate the memory of great actions, thus to coin out the life of an emperor, and to put every exploit into the mint—a kind of printing before the art was invented. Nor are medals of less use in architecture, painting, poetry, &c.; for a cabinet of medals is a collection of pictures in miniature, and by them the plans of many of the most considerable buildings of antiquity are preserved.——*Impressions of Medals.* The following is a very easy and elegant method of taking the impressions of medals and coins. Melt a little isinglass-glue made with brandy, and pour it thinly over the medal, so as to cover its whole surface; let it remain on for a day or two till it is thoroughly dry and hardened, and then taking it off, it will be fine, clear, and hard, and will have an excellent impression of the coin.

MEDAL'LION, a medal of an extraordinary size, supposed to be anciently struck by the emperors for their friends, and for foreign princes and ambassadors.

MED'ICINE, the art which treats of the means of preserving health when present, and of restoring it when lost: an art that assists nature in the preservation of health by the use of proper remedies. It is founded on the study of man's physical and moral nature, in health and in disease. It has struggled at all times, and continues to struggle, with favourite theories; and has, with the slowness which marks all the important advancements of mankind, but lately emerged from some of the prejudices of many centuries, and will doubtless long continue subject to others. Hippocrates, who lived about the middle of the fifth century before the Christian era, is the earliest author on medicine whose writings have been preserved. He was a man of very superior medical acquirements, and, by the consent of posterity he has been styled the Father of Medicine.

MEDIETAS LIN'GUÆ, in law, a jury consisting of half natives and half foreigners, which is impanelled in cases where the party to be tried is a foreigner.

ME'DIUM, in philosophy, the space or region through which a body in motion passes to any point. Thus ether is supposed to be the medium through which the planets move; air, the medium wherein bodies move near our earth; water, the medium wherein fishes live and move; glass, a medium of light, as it affords a free passage; and we also speak of a resisting medium, a refracting medium, &c.——*Medium*, in logic, the mean or middle term of a syllogism, being an argument or reason for which we affirm or deny anything.——*Medium* also denotes the means or instrument by which anything is accomplished, conveyed, or carried on. Thus money is the *medium* of commerce; bills of credit or bank notes are often used as mediums of trade in the place of gold and silver; and intelligence is communicated through the medium of the press.

MED'LAR, in botany, a plant of the genus *Mespilus*, cultivated in our gardens for its fruit, which, before it is perfectly ripe, has an excessively austere and astringent taste. The medlars do not ripen on the tree, but are gathered in autumn, and kept till they approach a state of decomposition before they are considered fit to be eaten.

MEDUL'LA, in anatomy, a soft oleaginous substance contained in the cavity of the bones. The marrow of the bones, which anatomists of many ages took to be a mere shapeless and irregular mass of matter, is found in reality to consist of a number of fine subtile fat oleaginous substances, and of a number of minute vesicles of a membranaceous structure, in which it is secreted from the arterial blood in the same manner as the fat of the rest of the body.——*Medulla cerebri*, the soft substance of the brain, covered externally with a cortical substance of an ashy colour.——*Medulla oblongata*, is the lower and medullary part of the cerebrum and cerebellum, and extended to the great foramen or hole in the occipital bone of the cranium, where it gives origin to the spinal marrow, and to the nerves of the brain.——*Medulla spinalis*, or spinal marrow, is a continuation of the medulla oblongata of the brain. It is included in a kind of bony canal, formed by the vertebræ, and in this is continued from the head to the extremity of the os sacrum.——*Medulla*, in vegetable physiology, the pith of plants, which is lodged in the centre or heart of the vegetable body. It is usually

MARL IS A SAXON WORD FOR MARROW; HENCE A VALUABLE UNCTUOUS CLAY IS SO CALLED, AS BEING THE FATNESS OF THE EARTH.



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of a pulpy substance, tolerably firm though rather brittle, as may be observed in the branches of elder, the stems of rushes, &c.

MEDU'SA, a genus of worms of the order *Mollusca*, or animals consisting of tender gelatinous masses, with arms extending from the lower surface. The largest are called sea-nettles, from their causing a slight and tingling redness when touched. They are supposed to constitute the chief food of cetaceous animals, and most of them emit a vivid phosphorescence in the water.——*Medusa's head*, a name given by some to the star-fish.

MEER'SCHAUM, a fine sort of Turkish clay, consisting of hydrate of magnesia combined with silex, which, when first dug, is soft, and makes lather like soap. From this clay, pipes are made in Germany, of various forms. It assumes a beautiful brown colour after it has been used for smoking for some time.

MEGATHE'RIUM, an extinct animal, the bones of which are found in a fossil state, chiefly in South America. It has been termed the *Giant Sloth*; as it unites the generic character of the sloth tribe with that of the armadilloes, and its size must have been equal to a rhinoceros.

MELIS'SA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are perennials, and include the different varieties of Balm.

MEL'LITE, a mineral found first in Thuringia. It is of a honey colour, and is usually crystalized in small octahedrons. ——*Mellitic acid*, a substance procured from mellite.

MEL'ODRAME, or MEL'O-DRAMA, a dramatic performance in which music is intermixed; or that species of drama in which the declamation of certain passages is interrupted by music. If only one person acts, it is a *monodrama*; if two, a *duodrama*. It differs from the opera and operetta in this, that the performers do not sing, but declaim, and the music only fills the pauses, either preparing or continuing the feelings expressed by the actors. Melodramas are generally romantic and extravagant.

MEL'ODY, in music, the agreeable effect of different sounds, ranged and disposed in succession; so that melody is the effect of a single voice or instrument, by which it is distinguished from harmony. "Melody," says an eminent French musician, "is for music, what thought is for poetry, or drawing for painting."

MEL'OE, a sort of insect, the principal species of which is the oil beetle, so called because on being handled, it exudes from its legs drops of a clear, deep yellow oil or fluid, of a very peculiar and penetrating smell. They are nearly allied to cantharides, and may, if necessary, be substituted for them.

MEL'ON, in botany, a plant, of which the two principal species are the musk-melon *(cucumis melo)*, and the water-melon *(cucumis citrullus)*. The former is a rough, trailing, herbaceous plant, having rounded, angular leaves, and yellow, funnel-shaped flowers. Though originally from the warmer parts of Asia, its annual root and rapid growth enable it to be cultivated in the short summers of northern climates; but the flavour of the fruit (which is sweet and delicious) is much heightened by exposure to a hot sun. The water-melon is sweet, cool, and very refreshing. It is cultivated to a great extent in all warm countries of both continents, and even in high northern latitudes. It serves the Egyptians for meat and drink, and is the only medicine used by them in fevers.

MEM'BRANE, in anatomy, a broad, nervous, and fibrous substance, which serves as a covering for different parts of the body, particularly the brain and the viscera. The membranes differ in thickness, according to the smallness of their fibres, or the number of their planes. These particular planes are termed laminæ, and are distinguished into internal, external, and middle. Small portions of membranes, especially when they are very thin, are called pellicles; and some membranaceous laminæ are united together by the intervention of a particular substance, composed of these pellicles, and called the cellular or spongy substance.——In botany, a *membranaceous leaf* has no distinguishable pulp between the two surfaces.

MEM'OIRS, a species of history, written by persons who had some share in the transactions they relate; answering to what the Romans called *commentarii* (commentaries). They furnish the reader with interesting individual anecdotes, and often expose the most secret motives, or disclose the whole character of events, which may be barely hinted at in books of general history. These qualities, when the writer is to be relied on for his veracity and judgment, give them an advantage over other kinds of historical writings, since they satisfy the mere reader for amusement, as well as the student; but when undertaken by a person whose love for the wonderful is greater than his regard for truth, their tendency is in the highest degree pernicious. The French appear to excel all other nations in the characteristic and piquant memoirs; though, among a multitude of meagre slip-slop performances, which have of late years issued from the English press, there are certainly some that contain matter of sterling value.

MEM'ORY, that faculty of the mind by which it receives ideas, and retains the knowledge of past events. Its strength may be greatly increased by judicious culture. Attention and repetition help much to the fixing ideas in our memories: but those which make the deepest and most lasting impressions, are such as are accompanied with pleasure and pain. Without this faculty, the whole animal world would be reduced to a kind of vegetative life, such as we observe in the lowest classes of animals; for it embraces all ideas received from the senses, as well as those of an abstract character; all feelings, all emotions. Ideas received from objects of sense are





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TO STRENGTHEN THE MEMORY, BY DIRECT EXERCISE OF ITS POWERS, IS VERY IMPORTANT; BUT IT MUST NOT BE CARRIED TO EXCESS.

THE PRINCIPLES OF MERCATOR'S PROJECTION WAS FIRST EXPLAINED BY E. WRIGHT, WHENCE THE DISCOVERY HAS BEEN ATTRIBUTED TO HIM.

sometimes curiously associated with others, so that the recurrence of the first immediately suggests the second. The cases are more striking, of course, in proportion as the organs are more acute. If, for instance, anything very agreeable or disagreeable happens to a man at the very moment of hearing a peculiar sound, or eating something of a peculiar taste, the recurrence of this sound or taste involuntarily awakens, in some organizations, an agreeable or disagreeable feeling. Another circumstance worthy of remark is, that old people lose their memory for recent events, but retain a lively impression of the events of their earlier years, which shows how much remembrance is influenced by the liveliness of the original impression. It is remarkable also, how some people, in consequence of diseases, particularly nervous fevers and apoplexies, lose the memory of everything which happened before their illness. Many other phenomena of the memory might easily be adduced did our limits permit.—— *Local Memory*, among orators, is but the associating the different heads to be handled, with the objects before the speaker's eyes; so that by only looking around him, he is put in mind of what he is to say.—— *Artificial Memory*, signifies the association of ideas to be remembered with other things in well-recollected order; or a method of assisting the memory by some artificial contrivance, as that of forming certain words the letters of which shall signify the date or era to be remembered. [See MNEMONICS.]

MEM'PHIAN, pertaining to Memphis; a term expressive of something very obscure: a sense borrowed from the intellectual darkness of Egypt in the time of Moses.

MEMPHITES, in mineralogy, a stone found at Memphis, in Egypt, which, when levigated, is laid on the parts that are to suffer by cutting and burning.

MEN'ACHANITE, in mineralogy, an oxyde of *titanium*, or mineral of an iron-grey colour, occurring in very small rounded grains, imperfectly lamellar, and of a glistening lustre; found near Menachan, in Cornwall.

MEN'DICANTS, a term applied to several orders of monks who live on alms, or beg from door to door.

MENDO'SA SUTU'RA, in anatomy, a scaly joining together of bones, as in those of the temple.

MENIS'CUS, in optics, a lens, convex on one side, and concave on the other.

MENISPERM'IC ACID, in chemistry, an acid obtained from the seeds of the menispermum coeculus.

MEN'IVER, in zoology, a small animal found in Russia, with white fur; or the fur itself.

MENOL'OGY, in the Greek church, a brief calendar of the lives of the saints, or a simple remembrance of those whose lives are not written.

MEN'SA, in archæology, denotes all patrimony or goods necessary for a livelihood.

MENSA'LIA, in law, such parsonages or spiritual livings as were united to the tables of religious houses, called by the canonists mensal benefices.

MENSA'RII, in Roman antiquity, officers appointed to manage the public treasury.

MENSO'RES, in antiquity, those officers who were sent onward to provide lodgings for the Roman emperors in their routes, and to the domestics who waited at table.—— *Mensores frumentarius*, distributors of the corn.

MEN'STRUUM, in chemistry, any fluid or subtilized substance which serves to extract the virtues of a solid body by infusion, decoction, &c. Water is the menstruum of all salts, oils of resins, acids of alkalies and the like: all liquors, in short, are called *menstruums* which are used as dissolvents.

MENSURA'TION, the art or process of ascertaining the contents of superficial areas, or planes, and of solids; it is also applied to determine the lengths, heights, depths, or distances of bodies and objects. It may therefore include Longimetry, or the art of measuring lines; Planimetry, or the method of measuring surfaces; and Stereometry, or the art of measuring solids. The mensuration of a plane superficies, or surface, lying level between its several boundaries, is easy: when the figure is regular, such as a square, or a parallelogram, the height multiplied by the breadth will give the superficial contents. In regard to triangles, their bases multiplied by half their heights, or their heights by half their bases, will give the superficial measure: the height of a triangle is taken by means of a perpendicular to the base, let fall from the apex or summit. The contents of a pillar are easily ascertained, even though its diameter may be perpetually varying; for if we take the diameter in different parts, and strike a mean between every two adjoined measurements, and multiply that mean area by the depth or interval between the two, the solid contents will be found. Solids having a certain degree of regularity, may be easily measured: thus a cube is computed by multiplying first its width by its length; then their product by its height: so that a cube measuring four feet each way, would be $4 \times 4 = 16 \times 4 = 64$, which is the meaning of the *cube root*. Solid bodies, or areas, granaries, hay-stacks, &c. come under the rule laid down for cubes, &c. Those, however, who would know the art of mensuration thoroughly, must of necessity make it their study. Enough only has been shown here to describe its principles.

MEN'THA, in botany, Mint, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are perennials.

MEPHITIC, in natural history and chemistry, a term equivalent to *noxious*, *pestilential*, or *poisonous*, and applied generally to vapours of that description. The gases, now called *hydrogen* and *azote*, are by some authors styled *mephitic airs*. Carbonic acid is also termed *mephitic acid*.

MERCA'TOR'S CHART, a chart, in



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which the parallels of latitude and the meridians are represented by straight lines.

MER'CHANT, one who exports the produce of one country, and imports the produce of another; or, according to popular usage, any trader who deals wholesale.

MER'CURY (in Latin, *hydrargyrum*), a mineral or metallic fluid, known also by the name of *quicksilver*, and distinguished from all other metals by its extreme fusibility, which is such that it does not assume the solid state until cooled to the 39th degree below 0 on Fahrenheit's thermometer. It is consequently always fluid in temperate climates. Its specific gravity is twice that of iron, and greater than that of any other metal, except platina, gold, and tungsten. Mercury is not only found in cinnabar and other ores, but it is sometimes met with in its pure and fluid state, lodged in the accidental cavities of hard stone. It penetrates the parts of all the other metals, renders them brittle, and in part dissolves them. It is the least tenacious of all known bodies, for its parts separate into more minute ones of the same figure, with the smallest force. It readily combines with gold, silver, lead, tin, bismuth, and zinc, and on that account is usefully employed in the silvering of looking-glasses, making barometers and thermometers, and for various other purposes. When very pure, mercury is not oxydized at the common temperature of the atmosphere, but may be converted into an oxyde by boiling. A combination of oxyde of mercury and muriatic acid, obtained by sublimation, is called *muriated mercury*, or *corrosive sublimate*. *Calomel* is composed of the same substances, but with a larger proportion of mercury.

——*Mercury*, in astronomy, is a small planet that emits a bright light, though on account of its vicinity to the sun it is seldom seen by the inhabitants of the earth. It never rises so much as two hours before the sun, nor sets so much after him. Sometimes when it plunges into the sun's rays in the evening, it may be seen crossing the sun under the form of a black spot; which passage is called the *transit of Mercury*, and is in reality an annular eclipse of the sun. On account of its rapid motion, the Greeks called this planet after the name of the swift messenger of the gods, and represented it by the figure of a youth with wings at his head and feet.

MER'CY-SEAT, in scriptnre antiquities, a table, or cover, lined on both sides with plates of gold, and set over the ark of the covenant, on each side of which was a cherubim of gold with wings spread over the mercy-seat.

MERIDIAN (from the Latin *meridies*, mid-day), in astronomy, a great circle of the celestial sphere passing through the poles of the world, and also the zenith and nadir, crossing the equinoctial at right angles, and dividing the sphere into two equal parts, or hemispheres, the one eastern and the other western.——In geography, the meridian is a great circle passing through the poles of the earth, and any given place whose meridian it is; and it lies exactly under, or in the plane of the celestial meridian. These meridians are various, and change according to the longitude of places, so that their numbers may be said to be infinite, for all places from east to west have their meridians.——The *first meridian* is that from which all the others are reckoned, which, being totally arbitrary, has been variously chosen by different geographers; but most nations now assume the meridian of the place where they live or the capital of their country, or its chief observatory, for a first meridian, and from thence reckon the longitude of places, east and west. Thus the British reckon from the meridian of Greenwich; the French from Paris; the Spaniah from Madrid, &c.——*Meridian of a globe*, is the brazen circle on which it turns, and by which it is supported. This is divided into 360 equal parts, called *degrees*. On the upper semicircle of the brass meridian these degrees are numbered from 0 to 90, or from the equator towards the poles, and are used for finding the latitudes of places. On the lower semicircle of the brass meridian they are numbered from 0 to 90, or from the poles towards the equator, and are used in the elevation of the poles.——*Meridian line*, an arch, or part of the meridian of the place terminated each way by the horizon. The exact determination of this line is of the greatest importance in all cases relating to astronomy, geography, dialling, &c., because on this all the other parts have their dependence. Without knowing the meridian line of a place, it would be impossible to make a dial, set a clock, or measure degrees on the earth's surface.——*Magnetic Meridian*, is a great circle passing through the magnetic poles, to which the needle of the mariner's compass conforms itself.——*Meridian altitude of the sun or stars*, is their altitude when in the meridian of the place where they are observed. Or it may be defined, an arch of a great circle perpendicular to the horizon, and comprehended between the horizon and the sun or star then in the meridian of the place.——*Meridional distance*, in navigation, the difference of the longitude between the meridian under which the ship is at present, and any other she was under before.

MER'LIN, in ornithology, the least of the hawk kind, but much resembling the haggard-falcon.

MER'LON, in fortification, is that part of a parapet which is terminated by two embrasures of a battery.

MER'MAID, an imaginary or fabulous creature, which seamen have described as having the head and body of a woman, with the tail of a fish. *Mermen* also have been seen, if we might trust the same authority. It is not, however, any recent fiction; ancient writers having given full credence to it. Some naturalists regard the *dugong*, a marine animal, to be the mermaid of early writers; because, of all the cetacea it approaches the nearest in form to man; and when its head and breast are raised above

THE PLANET MERCURY IS 3224 MILES IN DIAMETER, AND MAKES ITS REVOLUTION ROUND THE SUN IN ABOUT EIGHTY-EIGHT DAYS.

MERMAIDS ARE REPRESENTED AS HAVING LONG GREEN HAIR, BREASTS, AND ARMS, AND AS BEING FLOATING ON THE SURFACE OF THE OCEAN.



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the water, and its pectoral fins, resembling hands, are visible, the dugong might easily be taken by superstitious seamen for a semi-human being. The dugong is the only animal, yet known, that grazes at the bottom of the sea, without legs. It is of the form and figure of the whale. The position and structure of the mouth enable it to browse like a cow in a meadow, and the whole structure of the masticating and digestive organs, show it to live entirely on vegetables. It never comes on the land, or into fresh water, but frequents shallow inlets of the sea.

ME'ROPS, in ornithology, the Bee-eater; a genus of birds, order *Picæ*.

MER'ULA, (*turdus merula*, Lin.) in ornithology, the Blackbird.

MESEMBRYAN'THEMUM, in botany, a genus of plants, class 12 *Icosandria*, order 3 *Polygynia*. The species are perennials, and consist of the different Fig-marigolds.

MES'ENTERY, in anatomy, a thick fat membrane, placed in the middle of the intestines; its substance composed of membranes, fat, vessels of all kinds, and a number of glands. In the upper part, it is connected with the three superior vertebræ of the loins; and in the lower, with the intestines, and particularly with the *jejunum* and *ileum*; to which it also gives their outer coat. The uses of the mesentery are, to suspend, connect together, and retain in their due place, all the intestines; and to sustain the sanguiferous and lacteal vessels of the intestines.

MES'LIN, a term used for a mixture of various kinds of grain.

MESNE, in law, a lord of a manor, who has tenants holding under him, though he holds the manor of a superior.—*Mesne Process*, an intermediate process which issues pending the suit, upon some collateral interlocutory matter. Sometimes it is put in contradistinction to *final process*, or *process of execution*, and then it signifies all such processes as intervene between the beginning and end of a suit.

MESOCO'LON, in anatomy, that part of the mesentery, which, having reached the extremity of the *ileum*, contracts and changes its name; or the portion of the mesentery to which the *colon* is attached. The mesentery and the mesocolon are the most important of all the productions of the *peritonæum*.

MES'OLITE, a mineral of the zeolite family.

MESOPTERY'GIOUS, in ichthyology, an epithet sometimes applied to such fishes as have only one back fin, and that situated in the middle of the back.

MES'OTYPE, in mineralogy, prismatic zeolite; a mineral divided into three subspecies, fibrous, zeolite, natrolite, and mealy zeolite. The *mesotype* is said by some writers to be so named from its property, when transparent, of doubling images.

MESS, in military language, denotes a sort of ordinary, or public dinner, for the maintenance of which every officer, who takes his meals there, gives a certain proportion of his pay. In a British military mess room the young subaltern and the veteran field-officer meet on equal terms, a soldierlike frankness prevails, and the toils of service are, as they ought to be, forgotten during the moments devoted to social hilarity.—In naval language, the *mess* denotes a particular company of the officers or crew of a ship, who eat, drink, and associate together: hence the term *messmate* is applied to any one of the number thus associated.

MESSI'AH, a Hebrew word signifying *the anointed*; a title which the Jews gave to their unexpected great deliverer, whose coming they still wait for: and a name which Christians apply to Jesus Christ, in whom the prophecies relating to the Messiah were accomplished. Among the Jews, anointing was the ceremony of consecrating persons to the highest offices and dignities; kings, priests, and sometimes prophets were anointed: thus Aaron and his son received the sacerdotal, Elisha the prophetic, and David, Solomon, and others, the royal unction. The prophecies in the Old Testament, which relate to the coming of the Messiah are very numerous, some of which may be found in Gen. iii. 15, xlix. 10: Isaiah vii. 14: Dan. ix. 25, &c. The ancient Hebrews being instructed by the prophets, had very clear notions of the Messiah; these, however, were changed by degrees; insomuch that when Jesus Christ appeared in Judea, they were in expectation of a temporal monarch, who should free them from their subjection to the Romans. Hence they were greatly offended at the outward appearance, the humility, and seeming weakness of our Saviour; which prevented their acknowledging him to be the Christ they expected.

METAB'ASIS, in rhetoric, transition; a passing from one thing to another.

METACAR'PUS, in anatomy, that part of the hand between the wrist and the fingers. The inner part of the metacarpus is called the palm, and the other the back of the hand.

METACH'RONISM, an error in chronology, by placing an event after its real time.

MET'AL, in natural history, a simple, fixed, opaque body or substance, possessing a peculiar lustre; insoluble in water, fusible by fire, concreting again in the cold, and either *malleable*, *laminable*, (*i. e.* extensible under the rolling press), or *ductile*. They are also capable when in the state of an oxyde, of uniting with acids and forming with them metallic salts; mostly fossil, sometimes found native or pure, but more generally combined with other matter; and, in general, readily distinguished by their weight, tenacity, hardness, opacity, colour, and brilliancy. All earths are believed to be combinations of some metal with oxygen; and when exposed to the action of oxygen, chlorine, or iodine, at an elevated temperature, they generally take fire, and combining with one or other of these three elementary dissolvents, in definite proportions, are converted into earthy, or saline-looking bodies devoid of metallic lustre

ALL METALS ARE CALLED CONDUCTORS OF ELECTRICITY, BECAUSE THEY SUFFER THE ELECTRIC POWER TO PASS THROUGH THEIR SUBSTANCE.

THE ART OF TRANSMUTING METALS WAS A MERE REVERIE OF THE MIDDLE AGES, ALTHOUGH IT HAS BEEN ASCRIBED TO THE EGYPTIANS.



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SILVER IS TEN TIMES HEAVIER THAN WATER; GOLD, THIRTEEN TIMES; AND PLATINUM, THE HEAVIEST OF ALL METALS, TWENTY-THREE TIMES.

and ductility, called *oxydes*, *chlorides*, or *iodides*. Formerly only seven were known, or only seven had been decomposed from the materials with which they were mixed, and these had been discovered owing to their being sometimes found in a pure state. Chemical science has, however, decomposed other earths, and added thirty-one to the number of metals, some of them more curious than useful, so that we now reckon forty-three. Their names are as follows: 1. platinum; 2. gold; 3. silver; 4. palladium; 5. mercury; 6. copper; 7. iron; 8. tin; 9. lead; 10. nickel; 11. cadmium; 12. zinc; 13. bismuth; 14. antimony; 15. manganese; 16. cobalt; 17. tellurium; 18. arsenic; 19. chromium; 20. molybdenum; 21. tungsten; 22. columbium; 23. selenium; 24. osmium; 25. rhodium; 26. iridium; 27. uranium; 28. titanium; 29. cerium; 30. potassium; 31. sodium; 32. lithium; 33. calcium; 34. barium; 35. strontium; 36. magnesium; 37. yttrium; 38. glucinum; 39. aluminum; 40. zirconium; 41. silicium; 42. thorinum; 43. vanadium. Twelve of these are malleable, viz. platinum (or, as it as frequently called, *platina*), gold, silver, mercury, lead, copper, tin, iron, zinc, palladium, nickel, and cadmium. The following sixteen are not sufficiently tenacious to bear extension by hammering, viz. arsenic, antimony, bismuth, cobalt, manganese, tellurium, titanium, columbium, molybdenum, tungsten, chromium, osmium, iridium, rhodium, uranium, and cerium.—The term *metalloid* was given at first to the metals which have been obtained from the fixed alkalies and some of the earths. These bodies, having been found to be completely metallic, are now classed with the other metals.

METALEP'SIS, in rhetoric, the continuation of a trope in one word through a succession of significations, or the union of two or more tropes of a different kind in one word, so that several gradations or intervening senses come between the word expressed and the thing intended by it.

METAL'LIC VEINS, in mineralogy, are fissures which traverse the earth, as veins do an animal body, separating the respective rocks or strata, and filled with metallic ores, crystalizations, &c. differing from the rock in which the vein is situated. In what manner the minerals have been deposited in these receptacles, is yet considered doubtful. Some fissures appear to have been of great extent, taking a direction nearly east and west; these are considered the richest mines, and are worked with the greatest profit; they are also supposed to be the oldest. Others again, called cross veins, run nearly in a north and south direction, and are of less importance than the former. Whether these rents have been formed by desiccation, or by natural convulsions (perhaps by both), philosophers have not yet determined. Veins differ in their magnitude and position; some vary from sixty to one hundred feet wide in certain parts, and are not more than ten or twenty in others; these are commonly filled with what is called vein stuff, mixed with the metal; others are only a few inches wide. These veins, considered as fissures or rents, are not perpendicular, but incline more or less, and are open from the surface of the earth to the depth of 20 to 30 fathoms. However, these are not the only repositories for metals; there are other deposits reverse to the preceding, which are called flat or pipe veins, where the solid rock forms the roof and bottom of the mine: these are irregular in their direction and magnitude, and appear like a series of small caverns, connected with each other. The top, bottom, and boundaries are lined, and sometimes filled with spar, lead ore, &c. and the latter is met with in nests, filling cavities in solid limestone: it is even found penetrating fossil shells. The rocks in which these veins are situated, do not, on analysis, contain a particle of the metal which they enclose.——Inconsiderable veins, which diverge from the principal, are called *slips*; and such masses of ore as are of considerable magnitude, but no great length, are called *bellies* or *stock-works*.

METALLOG'RAPHY, a treatise on metallic substances.

METALLURGY, the art of separating metals from their ores, comprising the processes of *assaying*, *refining*, and *smelting*; to which is sometimes added the art of gilding.

METAMORPHOP'SIA, in medicine, disfigured vision, or a defect of sight which causes persons to see objects under a form different from the reality.

METAMORPH'OSIS, the changing of something into a different form; in which sense it includes the transformation of insects, as well as the mythological changes related by the poets of antiquity.——By the *Metamorphoses of Insects* is meant the successive changes through which they pass from the egg to the caterpillar, or larva state, to the chrysalis, pupa, or aurelia state, and lastly to the moth, or butterfly form, when, having laid their eggs, they die.

METAPHOR, in rhetoric, is the application of a word in some other than its ordinary use, on account of some applicability or resemblance between the two objects: thus, if we call a hero a *lion*; a shrewd, crafty fellow a *fox*; a minister, *a pillar of the state*, &c., we speak *metaphorically*. Brevity and power are the characteristic excellencies of the metaphor; novelty shows the original wit: but metaphors indulged in merely for the sake of unexpected contrast, frequently prove more allied to the ridiculous than the sublime, and ought to be but rarely used.

METAPHYSICS, that branch of philosophy which inquires into the science of mind, or spiritual existence. With respect to animals, it takes them up where physiology leaves them; and, proceeding higher, ventures to speak of Deity itself. The end of this science is the search of pure and abstracted truth. It casts a light upon all the objects of thought and meditation, by ranging every being with all the absolute and relative perfections and properties, modes and attendants of it, in proper ranks or classes; and thereby it discovers the va-

TIN AND COPPER MELTED TOGETHER TO FORM BRONZE, OCCUPY LESS SPACE, BY ONE FIFTEENTH, THAN THEY DO WHEN SEPARATE.



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rious relations of things to each other, and what are their general or special differences from each other; wherein a great part of human knowledge consists. It has been very pertinently remarked that "a man who contemns metaphysics must think his own nature unworthy of examination. Metaphysical inquiries, indeed, have often been disfigured with overstrained subtilty and revolting sophistry, and too often arbitrary analogies, bold comparisons, and unmeaning mysticism have claimed and received homage as having unlocked the long-hidden truth; but the same has taken place in regard to religion and politics, and all the great subjects which strongly stir the soul of man."

METAPH'RASIS, a bare or literal translation out of one language into another.

MET'APLASM, in grammar, a transmutation or change made in a word by transposing or retrenching a syllable or letter.

METAST'ASIS, in medicine, a translation or removal of a disease from one part to another, or such an alteration as is succeeded by a solution.

METATA'RSUS, in anatomy, the middle of the foot, or the part between the ankle and the toes.——The *metatarsal bones* are the five longitudinal bones between the tarsus and the toes.

METATH'ESIS, in literature, a figure by which the letters or syllables of a word are transposed.——In medicine, a change or removal of a morbid cause, without expulsion.

METEMPSYCHO'SIS, the doctrine of transmigration, which supposes that the soul of man, upon leaving the body, becomes the soul of some other animal. This was the doctrine of Pythagoras and his followers, and such is still the prevailing doctrine in some parts of Asia, particularly in India and China.

METEMP'TOSIS, a term in chronology expressing the solar equation necessary to prevent the new moon from happening a day too late, or the suppression of the bissextile once in 134 years.

METEOR, in natural history, a transitory body, or semblance of a body, appearing in the atmosphere, and caused by the action of the electric fluid upon other matters. Meteors, in the most general sense of the word, may be reduced to four classes —*igneous* or *fiery* meteors, including fireballs, falling stars, lightning, and St. Elmo's fire; *luminous* meteors, as the aurora borealis, zodiacal light, parhelia or mock-suns, haloes, &c.; *aqueous* meteors, as clouds, rain, hail, snow, &c.; and *aerial* meteors, as wind and water-spouts. It will be seen that these phenomena are of very different natures, and owing to different causes. The only connexion between them is that of a common medium; and we therefore refer to the separate articles for information concerning them: also to ELECTRICITY, METEORIC STONES, FALLING STARS, &c.

METEOROLITES, METEOR'IC STONES, or AEROLITES, are solid semi-metallic substances, which fall from the atmosphere. Although the descent of such bodies had been long reported, the fact was treated as too chimerical for belief until within these few years past; but all recent accounts of such phenomena concur in describing a luminous meteor moving through the air in a more or less oblique direction, attended by a hissing noise, and the fall of stony or semi-metallic masses, in a state of ignition. Although they have fallen in very different countries, and at very distant periods, when submitted to chemical analysis, they all agree in component parts; the metallic particles being composed chiefly of nickel and iron; the earthy, of silica and magnesia. The hypotheses to account for these visitations are various and complicated; some have explained them to be earthy matter, fused by lightning; others maintain that they are the offspring of terrestrial volcanoes; and others, that they come from the moon. [See FALLING STARS, under which head a more detailed account is given.]

METEOROL'OGY, the science which treats of the phenomena of the atmosphere. These phenomena may be classed under five distinct heads, viz. the alterations that occur in the weight of the atmosphere; those that take place in its temperature; the changes produced in its quantity by evaporation and rain; and those which arise from electric and other causes.——Meteorology borrows from chemistry her analysis to determine the composition of the air itself, and of the substances which it contains, and by which it is acted upon; the manner in which the different processes of evaporation, freezing, thawing, &c. go on, and how they affect the state of the atmosphere; the action of these invisible agents, light, heat, electricity, &c., and their tremendous effects. From physics, meteorology takes the mechanical action of these and similar powers and substances, the weight and velocity of the air, the laws of the reflection, refraction, and motion of light, &c. By these aids this science explains the formation, fall, or deposition of hail, snow, rain, dew, and frost; the action of thunder and lightning; the prevalence and properties of certain winds; the nature and causes of meteors, &c. All this, and more, is to be carefully studied by every one who would keep a meteorological register, from which, if carefully attended to, a body of maxims may be drawn that would go far to dispel a host of popular errors and delusions, and make the value of true meteorological science manifest to the most common observer.

METEROMAN'CY, a species of divination by thunder and lightning, held in high estimation by the Romans.

METEOROS'COPY, that part of astronomy which treats of the distance of the stars and other celestial bodies.

METHEG'LIN, a liquor made of honey and water boiled and fermented, often enriched with spices.

METH'OD, a suitable and convenient arrangement of things or ideas. In logic and





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rhetoric, the art or rule of disposing ideas in such a manner that they may be easily comprehended, either in order to discover the truth, or to demonstrate it to others. Method is essential to science; and without method, business of any kind will fall into confusion. In studying a science, we generally mean by *method*, a system of classification, or arrangement of natural bodies according to their common characteristics; as the method of Ray, the Linnæan method. The difference between *method* and *system* is this: *system* is an arrangement founded, throughout all its parts, on some one principle: *method* is an arrangement less fixed and determinate, and founded on more general relations.

METHOD'IC SECT, a name given to certain ancient physicians, who conducted their practice by rules after the manner of Galen and his followers, in opposition to the *empiric sect*.

METH'ODIST, a term originally applied to the founder of a sect of physicians at Rome; next to a religious sect, who, in the 17th century, defended the church of Rome from the attacks of the Protestants; and now used to designate the followers of Wesley and Whitfield, the former professing the doctrines of Arminius, and the latter of Calvin. [See the "*Biographical Treasury*" for the lives and doctrines of these.]

METON'IC CY'CLE, in chronology, the period of nineteen years, in which the lunations of the moon return to the same days of the month; so called from its discoverer Meton, an Athenian, who lived about 400 B.C. From its great use in the calendar, this is called the *golden number*.

METONYM'IA, or MET'ONYMY, in rhetoric, a figure of speech whereby one thing is put for another, as the cause for the effect, the part for the whole, and the like; as, "my friend keeps a good *table*," instead of good *provisions*; "that boy has a clear *head*," meaning *intellect*.

MET'OPE, in architecture, the interval, or space, between the triglyphs of the Doric frieze, which among the ancients used to be painted or adorned with carved work, representing the heads of oxen, &c.

METOPOS'COPY, the study of physiognomy.

ME'TRE, in poetry, a system of feet composing a verse; as pentameter, a verse of five feet, hexameter, a verse of six feet, &c.

—*Metre*, in commerce, a French measure equal to rather more than thirty-nine inches, the standard of lineal measure; being the ten millionth part of the distance from the equator to the North Pole, as ascertained by actual measurement of an arc of the meridian.

METROCEL'IDES, in medicine, marks or blemishes impressed upon the child by the mother's imagination.

METROMA'NIA, in medicine, a rage for composing verses, which is said (upon the authority of a respectable medical work) to have once seized a person in a tertian fever, who was otherwise by no means gifted with poetical powers, but who, when the fit was off, became as dull and prosaic as the most unimaginative of human beings could desire. We apprehend that fits of this kind are more frequent than the public have any idea of.

METROP'OLIS, the capital or principal city of a country or province; as London or Paris. The term metropolis is also applied to archiepiscopal churches, and sometimes to the principal or mother church of a city. The Roman empire having been divided into thirteen dioceses, and one hundred and twenty provinces, each diocese and each province had its metropolis, or capital city, where the pro-consul had his residence. To this civil division, the ecclesiastical was afterwards adapted, and the bishop of the capital city had the direction of affairs, and the pre-eminence over all the bishops of the province. His residence in the metropolis gave him the title of *metropolitan*.

MEZ'ZANINE, in architecture, an entresole, or little window, less in height than in breadth, serving to give light to an attic.

MEZ'ZO, in music, an Italian word signifying *half*. Thus *mezzo forte*, *mezzo piano*, *mezzo voce*, imply a middle degree of piano or soft. By *mezzo soprano* is understood, a pitch of voice between the soprano or treble and counter-tenor.

MEZZOTIN'TO, a particular manner of engraving, so called from its resemblance to drawings in Indian ink. To perform this, the smooth surface of the copper or steel plate is furrowed all over with an instrument made for the purpose, till the whole is of a regular roughness throughout; so that if a paper were to be worked off from it at the copper-plate press it would be black all over. When this is done, the plate is rubbed with charcoal, black chalk, or black lead, and then the design is drawn with white chalk; after which the outlines and deepest shades are not scraped at all, the next shades are scraped but little, the next more, and so on, till the shades gradually falling off, leave the paper white, in which places the plate is perfectly burnished. By an artificial disposition of the shades, and different parts of a figure on different plates, mezzotintos are printed in colours, so as to represent actual paintings.

MIAS'MA, the contagious effluvia of any putrefying bodies, rising and floating in the atmosphere, and considered to be noxious to health. One of the most powerful correctors of miasmatic effluvia is chloride of lime.

MI'CA (called also *talc*, *glimmer*, and *Muscovy glass*), is a mineral of a foliated structure, which forms the essential part of many mountains. It consists of a number of thin laminæ adhering to each other; and has long been used as a substitute for glass, particularly in Russia.

MI'CAH, a canonical book of the Old Testament, written by the prophet Micah; in which the writer censures the reigning vices of Jerusalem and Samaria, and denounces the judgments of God against both kingdoms. The birthplace of our Saviour



THE DISTINCTIVE CHARACTER OF METHODISM IS TO BE SOUGHT FOR, NOT SO MUCH IN ITS DOCTRINES, AS IN ITS APPLICATION OF THEM.

MERCURY, AND THEREFORE DISPLAYED THE SEQUENCE WHICH A MERE REASONER COULD INSPIRE, AND CELESTIAL ARMIES, AND CELESTIAL CONVERSE.

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THE MALES OF MANY SPECIES OF MIGRATORY BIRDS UNDERTAKE THEIR MIGRATIONS SEVERAL DAYS BEFORE THE FEMALE BIRDS.

is thus designated by him: "But thou, Bethlehem Ephrata, little among the thousands of Judah, out of thee shall come forth a ruler in Israel, whose generation is of old, from everlasting."

MIC'AREL, an argillaceous earth, of a brownish or blackish red colour, commonly crystalized in six-sided prisms.

MICHAELMAS, or *Feast of St. Michael*, a festival of the Romish Church, observed on the 29th of September.

MICROG'RAPHY, the description of objects which are too minute to be seen without the help of a microscope.

MICROM'ETER, an astronomical instrument fitted to telescopes in the focus of the object-glass, by the help of which the apparent magnitude of small objects is measured with great exactness.

MI'CROSCOPE, an optical instrument consisting of an arrangement of lenses which enables the observer to see an object, or its true image, nearer than with the naked eye, and magnified accordingly. The numerous forms of microscopes may be included under the heads of *single*, *compound refracting*, and *compound reflecting* microscopes. The increase of apparent magnitude obtained by the employment of lenses, is proportioned to the difference of the distance of an object from the lens and the distance when seen without its assistance. This latter distance (the distance of distinct vision of minute objects with the naked eye) varies in different persons, and at different periods of life. Some authors adopt ten inches as the standard of the focus of the eye, under ordinary circumstances, and its decimal character makes it a convenient multiplier or divisor.——Of late diamonds have been formed into lenses in consequence of their high refractive power, whereby we can obtain lenses of any degree of magnifying power with comparatively shallow curves; and as the dispersion of colour in this substance is as low as in water, the lens is nearly achromatic.——The *solar microscope* consists of a common microscope connected with a reflector and condenser, the former being used to throw the sun's light on the latter, by which it is condensed to illuminate the object placed in its focus. This object is also in the focus of the microscopic lens on the other side of it, which transmits a magnified image of it to a wall or screen.——The principle of the *lucernal microscope* is the same, except that a lamp is used instead of the sun to illuminate the object.

MIDDLE AGES, a term used by historians to denote that period which begins with the final destruction of the Roman empire, and ends with the revival of letters in Europe, or, as some writers have it, with the discovery of America; *i. e.* from the eighth to the fifteenth century. In general, it may be said, the middle ages embrace that period of history in which the feudal system was established and developed, down to the most prominent events which necessarily led to its overthrow.

MID'SHIPMAN, in the British navy, a sort of cadet, whose duty it is to second the orders of the superior officers, and assist in the necessary business of the vessel, either aboard or ashore. No person can receive a commission, without having served a certain number of years in the royal navy in this capacity, unless he has been mate of a merchant-man, and experienced years of actual service, either in the navy or in the merchant service.

MID'SUMMER, the summer solstice. The 24th of June is Midsummer-day, which is also quarter day.

MIGRATION OF BIRDS, the annual passage of birds from one country to another in quest of provisions and mild climate. Thus, the swallow and many other species migrate into southern climates during our winter, and return in the spring. Some have altogether denied the existence of migration, because they could not understand how migrating birds could support themselves so long on the wing, as to accomplish their journeys, and at the same time live without food during their voyage. These difficulties, however, vanish altogether if we attend to the rapidity of the flight of birds. Hawks and many other birds probably fly at the rate of 150 miles an hour; an eider duck at 90 miles an hour: Sir George Cayley computes the common crow to fly at nearly 25 miles an hour; and Spallanzani found that of the swallow about 92 miles, while he conjectures the rapidity of the swift to be nearly three times greater. Ornithologists have observed that, on the old continent, birds migrate in autumn to the south-west, and in spring toward the north-east; yet the courses of rivers and chains of mountains exercise considerable influence on the direction of their flight. On the new continent the points of direction are not the same. Captain Sir E. Parry has satisfied himself that the birds of Greenland go to the south-east. It is remarkable, also, that the young of certain species do not make the same journey as the old birds; they go more to the south, so that it is very common to find, in the south of Europe, only the young birds of a certain species, whilst the older ones remain more to the north. In other species the females go farther south. Mr. White, in his *Natural History of Selborne*, says, "It does not appear to me that much stress may be laid on the difficulty and hazard that birds must run in their migrations, by reason of vast oceans, cross-winds, &c.; because, if we reflect, a bird may travel from England to the Equator without launching out or exposing itself to boundless seas—and that by crossing the water at Dover, and again at Gibraltar."

MILE, a measure of length or distance, which, in England, contains 8 furlongs, or 1760 yards, or 5280 feet.——The Roman mile was a thousand paces, equal to 1600 yards English measure.

MILIARY GLANDS, in anatomy, the small and infinitely numerous glands which secrete the perspiration.——*Miliary-fever*, a malignant fever, so called from the erup-

IN ANIMALS, HABIT AND INSTINCT ARE THE SAME NOW AS THEY EVER WERE; WHERE THERE IS NO MIND, ALL IS STATIONARY.



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tion of certain pustules resembling millet-seeds.

MILI'TIA, a body of soldiers, regularly enrolled and trained, though not in constant service in time of peace, and thereby distinguished from *standing armies*. In England the origin of this national force is generally traced back to Alfred. The most characteristic features of the English militia at present are, that a number of persons in each county are drawn by lot, for five years (liable to be prolonged by the circumstance of the militia being drawn out and embodied), and officered by the lord-lieutenants, and other gentleman, under a commission of the crown. They are not compellable to leave their county, unless in case of invasion or actual rebellion within the realm, nor, in any case, to march out of the kingdom.

MILK, an animal fluid peculiar to females of the class *mammalia*, secreted by peculiar glands, and designed to nourish animals in the early part of their life. This fluid, which is only produced from the body on occasion of suckling, is, notwithstanding, constantly formed. It is the proper sustenance of the animal itself; all the nutritive parts of food being formed into chyle, and chyle into milk. It is of an opaque white colour, a mild saccharine taste, and a slightly aromatic smell. When this fluid is allowed to stand for some time, it undergoes spontaneous changes, and is resolved into its component parts, throwing up a white, thick, unctuous *cream* to its surface, and the milk beneath becomes thinner than before, and is of a pale bluish colour. The constituent parts of milk are,—1. the *aroma*, or odorous volatile principle, which flies off when it is fresh milked in the form of visible vapour; 2. *water*, which constitutes the greatest part; 3. *bland oil*, from which the cream is formed; 4. *curd*, which is the animal gluten that coagulates; 5. *sugar*, which, with the water, forms the serum of milk; 6. some neutral salts, as the muriate of potash and muriate of lime, which are accidental, not being found at all times, nor in every milk. Human milk is very sweet and thin; the next is that of asses, then that of mares, then of goats, and lastly of cows: whence it is prescribed in this order to consumptive persons. The rennet prepared of the juices of such creatures as chew the cud being mixed with milk, coagulates it into an uniform mass, which may be cut with a knife, and it thus spontaneously separates into *whey* and *curds*.—When milk contained in wire-corked bottles, is heated to the boiling point in a water bath, the oxygen of the included small portion of air under the cork seems to be carbonated, and the milk will afterwards keep fresh, it is said, for a year or two; as green gooseberries and peas do by the same treatment.—Butter and cheese are made of milk, by processes not necessary to describe in this place.

MILL, a complicated engine, or combination of machinery, to effect purposes which require great force. The force employed is sometimes water, sometimes wind, and at others steam, or horses. The principle is always the same; a main shaft enters the works, to which wheels with cogs are affixed, and the power being the contrary of the velocity, small wheels give great power, and large wheels less power; other wheels are then connected with these in various directions, and the resulting force applied to any desirable object. When corn is to be ground, large stones, cut in grooves, are made to work one against the other in such manner as to break or pulverize the grain. There are also bark mills, paper mills, and oil mills, which operate by the force of percussion; also, silk, cotton, and flax mills, which perform sundry operations; and saw mills, which revolve circular saws with great energy and precision.

MIL'LING, a process in coining, which consists in stamping the coin by the help of a machine they call a *mill*, in lieu of making the stamp by the blows of a hammer, which was formerly the mode. This mill will stamp 20,000 planchets in one day. The *planchets* are pieces of metal with a smooth flat surface fit to receive the impression intended to be given to the coin, and are of a proper size, thickness, and weight. By fixing them in the mill, between the two *dies*, or steel masses, on which the figures are previously engraved that are to be stamped on the planchet, the impression of both is received at one pull.

MILLENA'RIANS, or CHILI'ASTS, a name given to those who, in the primitive ages, believed that the saints will one day reign on earth with Jesus Christ a thousand years. The former appellation is of Latin original, the latter of Greek. The Millenarians held, that after the coming of Antichrist, and the destruction of all nations which shall follow, there shall be a first resurrection of the just alone; that all who shall be found upon earth, both good and bad, shall continue alive—the good, to obey the just who are risen as their princes—the bad to be conquered by the just, and to be subject to them; that Jesus Christ will then descend from heaven in his glory; that the city of Jerusalem will be rebuilt, enlarged, embellished, and its gates stand open night and day. The Millenarians founded their belief on the Mosaic history of the creation. Considering this history as a prototype of the fate of the world, and concluding from Psalm xc. that 1000 years make with God one day, they beheld in the six days of creation, 6000 years of terrestrial labours and sufferings, and in the seventh, the day of rest, a period of 1000 years, in which the reign of Christ should be established. This reign of 1000 years is usually styled the *millennium*; and, strange as it may appear, this wild vagary of a disordered fancy has not been without its advocates and expounders even during the nineteenth century!

MIL'LEPORE, in zoology, a genus of lithophytes or polypi of various forms, which have the surface perforated with little holes or pores, or even without any apparent per-





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IN SOME OF THE CORNISH MINES THERE ARE STEAM-ENGINES, WHERE THE POWER OF THE STEAM EQUALS THAT OF SIX HUNDRED HORSES.

foration. When in a fossil state they are termed *millepori'tes*.

MIL'LET, in botany, a plant of the genus *Milium*, of several species, one of which is cultivated as an esculent grain, and, when ground, often made into puddings.

MIL'LIPEDE, in entomology, an insect having many feet; a species of Oniscus, called the wood-louse.

MILL'-STONE, or BUHR'-STONE, in mineralogy, a siliceous stone, occurring in great masses, with a straight fracture, but not so brittle as flint, though of the same hardness. It is feebly translucent, and of a grayish hue. Buhr-stones constitute a very rare geological formation, being found in abundance only in the mineral basin of Paris, and a few adjoining districts. It forms a part of the fresh-water formation; and above it there is nothing but alluvial soil, or diluvial gravel, sand, and loam.

MILT, in anatomy, the spleen, a viscus situated in the left hypochondrium under the diaphragm. Also, the soft roe of fishes, or the spermatic part of the males.

MIME, in the ancient comedy, a person who acted any character by mere gestures, and hence denominated pantomime.

MIME'SIS, in rhetoric, imitation of the voice and gestures of another person.

MIMO'SA, or the *Sensitive plant*, so called from its remarkable property of receding from the touch, and giving signs, as it were, of animal life and sensation; this motion it performs by means of three distinct articulations, viz. of a single leaf with its pedicle, of the pedicle to its branch, and of the branch to the trunk or main stem. It is also the name of a numerous tribe of plants, which are all natives of warm climates, and belong to the class *Polygamia*, order *Monoecia*.

MI'NA, a Grecian coin, valued at a hundred drachmæ. Sixty of them were equivalent to a talent.

MINA'RET, a round tower or column, generally surrounded with balconies, and erected near the mosques in Mohammedan countries, from which the people were summoned to prayers, bells not being in use among them.

MIND, the intellectual or intelligent power in man. "When the mind," says Mr. Locke, "turns its view inward upon itself, thinking is the first idea that occurs; wherein it observes a great variety of modifications, whence it frames to itself distinct ideas. Thus the perception annexed to any impression on the body by an external object, is called sensation; when an idea recurs without the presence of the object, it is called remembrance; when sought after by the mind, and again brought into view, it is recollection; when the ideas are taken notice of, and, as it were, registered in the memory, it is attention; when the mind fixes its view on any one idea, and considers it on all sides, it is called study."

MINE, a cavity under ground, formed for the purpose of obtaining minerals, often very deep and extensive. The descent into them is by a pit, called a shaft, and the excavations which follow the mineral sought are called the workings. There are mines of gold, silver, copper, iron, diamonds, salt, alum, antimony, &c. These mines are mostly dug through various strata or beds of substances, of which the interior of the earth is composed. The clues by which mines are discovered, are mineral waters, the discolouration of vegetables, the appearance of pieces of ore, or metallic sand, or various exhalations from the soil.——The art of *mining* includes the scientific knowledge requisite for opening and working mines, as well as preparing ores for use. The latter consists, in the first place, in breaking asunder the larger pieces, and then purifying them, by means of water, from the earth which adheres to them; in the separation of the coarser substances from the finer, by means of a sieve that moves up and down in water: in the breaking of the ore in stamping mills, and in the separation of the finely interspersed metal from the stone or earth with which it is surrounded, &c. It also includes the final purification of the ore, by means of acids, by amalgamation, by fusion, &c.——*Mine*, in the military art, denotes a subterraneous passage under the wall or fortification, for the purpose of blowing it up by gunpowder. The fire is communicated to the mines by a pipe or hose, made of coarse cloth, called a *saucisson*, extending from the chamber to the entrance of the gallery, to the end of which is fixed a match, that the miner who sets fire to it may have time to retire before it reaches the *chamber*, or place where the powder is lodged. The mines of a fortress are called *countermines*, the gallery of which runs under the covered way along the outer margin of the fosse.

MINERAL'OGY, that branch of natural history which makes us acquainted with the properties and relations of minerals, and teaches us to characterize, distinguish, and class them, according to their properties.

MIN'ERALS, the general name for all metals and metallic substances, whether pure, or as ores, or oxydes, in which latter sense it includes all earthy substances, because they are considered as oxydes of metals. Minerals were formerly divided into salts, earths, inflammable substances, and ores; a division which serves for a general distribution: but a more scientific arrangement into classes, orders, genera, species, subspecies, and varieties, has been adopted to meet the more precise views of modern mineralogists. Among this varied class of materials, many are compounded of such principles, and formed under such circumstances and situations in the earth, that it is difficult to distinguish them without having recourse to the test of experiment. The valuable mineral products of Britain lie in the northern and western sides, the other sides consisting of secondary formations and alluvial soil.

MIN'ERAL WATERS are of various kinds, but generally so far impregnated with foreign matter as to give them a sensible flavour and a specific action upon the

SOME MINERALOGISTS THINK, THAT IF THE ANDES WERE PROPERLY EXAMINED, SILVER WOULD BECOME AS CHEAP AS COPPER.



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animal economy. They are usually divided into four classes: acidulous or carbonated, saline, chalybeate or ferruginous, and sulphureous. They are also further divided into warm (or thermal) and cold, as well as into natural and artificial. The saline springs consist, in general, of salts of soda and lime, or of magnesia and lime, with carbonic acid and oxyde of iron: such are those of Pyrmont, Seidlitz, Epsom, &c. The ferruginous waters have a decided styptic taste, and are turned black by an infusion of gall-nuts. The iron is sometimes in the state of an oxyde, held in solution by carbonic acid; sometimes it exists as a sulphate, and sometimes both as a sulphate and carbonate: among these are the waters of Spa, Vichy, Cheltenham, Tunbridge, &c. The acidulous waters are characterized by an acid taste, and by the disengagement of fixed air: of this kind are the waters of Bath, Buxton, Bristol, &c. The sulphureous waters are easily recognized by their disagreeable smell, their property of tarnishing silver and copper, &c.: of this class are the waters of Aix la-Chapelle, Harrowgate, and numerous others.—The artificial mineral waters are produced in the laboratories of the chemists, and are either merely imitations of the natural waters, or composed of different ingredients, so as to form compounds, valuable for medicinal purposes, but not known to exist in nature.

MINERVA'LIA, in Roman antiquity, festivals celebrated in honour of Minerva, in the month of March; at which time the scholars had a vacation, and usually made a present to their masters, called from this festival *minerval*.

MIN'IATURE, a small painting in water-colours, consisting of little points or dots instead of lines on ivory, or some other smooth material, and used in taking portraits; also the portrait itself.

MIN'IM, in music, a note equal to two crotchets, or half a semibreve.

MIN'IMS, a religious order in the church of Rome, founded by St. Francis De Paula, towards the end of the 15th century.

MIN'IMUM, the last quantity assignable in a given case; opposed to *maximum*.

MINING COMPANIES. As we have elsewhere commented on the disastrous consequences which followed the various speculative associations that sprung up in London during the years 1824 and 1825, we take this opportunity of inserting (in corroboration of what we have written) some valuable observations, by Mr. M'Culloch, on the "mining companies" of that period, as forming a prominent feature in the popular delusions which were then so rife with ruin. If it be asked why we attach so much importance to this subject, we reply, that the motive which impels us to speak of these "doings" is not merely a vain desire to perpetuate the remembrance of an era in our commercial history, as dishonest as it was discreditable, but to point to them as admonitory hints of what may reasonably be expected from many of the grand projects which still court the eye in every possible direction. Look at the public prints; see what magnificent schemes are *at present* afloat—what magniloquent advertisements are daily announcing *embryo* companies with their millions of capital! (flourishing on paper); and, above all, observe what a sudden transformation takes place in the living representatives of all this patriotic enterprize—the veriest grubs of yesterday, now fluttering in the sun a busy swarm of gilded butterflies. "The *mania* for mining concerns, which raged in London and the empire generally in 1824 and 1825, after the opening of Mexico and other parts of Spanish America to our intercourse, forms a remarkable, and, we are sorry to add, disgraceful era in our commercial history. Now that the madness is past, we have difficulty in conceiving how men in the habit of sober calculation could be led to entertain such romantic speculations, and to pay such high premiums for shares in distant and uncertain undertakings. We may, therefore, be excused for appropriating a page or two to the history of an infatuation hardly second to that which led to the South Sea and Mississippi schemes. These associations were formed in London early in 1824, and during the spring and summer of that year their stock or shares bore only a small premium; but towards the winter it began progressively to rise, to the surprise of several of the directors; seeing that it arose less from any favourable intelligence of the mines (for the account from Mexico merely reported the arrival of the English agents) than from a blind ardour and spirit of speculation in the public—a spirit which, seeing nothing tempting in our own funds, or in those of continental Europe, directed itself to distant objects, and particularly to Spanish America. It appeared as if our countrymen were about to reap an immediate harvest; to lay their hands on a treasure hid for ages. America, it is said, had been discovered, in one sense, above three centuries; but this was the true discovery, —the effectual access to its resources. Every new contract for a Mexican mine produced a rise in the shares of the companies, as if this fresh undertaking must necessarily be a source of profit to the others! And the result was, that in January, 1825, the premiums on the shares of each of the companies mentioned above exceeded cent. per cent., although no substantial reason could be given for any advance whatever. It must not, however, be imagined that this rise of price was occasioned solely by the competition of individuals who intended to continue to hold stock, and to trust to the dividends made by the companies for a return. That this was the case in the first instance is speaking generally true. But others, actuated by very different views, speedily entered the field. A peculiar combination of circumstances, at the head of which must be placed an almost incredible degree of ignorance and folly on the part of a considerable portion of the public, spread a spirit of gambling among all classes. Many who were most eager in the pursuit of shares, intended

BEDS OF CHALK OFTEN CONTAIN MARINE SHELLS AND ANIMALS, TOGETHER WITH FRUIT, FOSSIL WOOD, AND OTHER PRODUCTIONS.

A PRODIGIOUS VARIETY OF VEGETABLES, TOTALLY DIFFERENT FROM ANY AT PRESENT KNOWN, ARE DISCOVERED IN THE DIFFERENT MINES.



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only to hold them for a few days or weeks, to profit by the rise which they anticipated would take place, by selling them to others more credulous or bold than themselves. The confidence of one set of speculators confirmed that of the others. Meanwhile the public gullibility, or rather its indiscriminating rapacity, was liberally administered to. Company after company was formed without any previous compact; in other words, without any foundation whatever! The plan was to fix on a district in America, understood to contain mines; to form a company bearing the names of such districts; to obtain a first payment of the shareholders, and to send out agents, or commissioners, as they were termed, to survey the district and engage the mines. Such was the case of most of those having the names of districts in South America, subjoined to the present statement; it was the case also of the Hispaniola or St. Domingo companies, formed on the basis of accounts given by Dr. Robertson of mines enough in the island some three centuries ago! and yet lawyers, clergymen, and even the nobles of the land were candidates for shares in these miserable bubbles, in the hope of finding (in which luckily most of them were disappointed) some dupe to buy their shares at a premium!"

MIN'ION, the name given to a small kind of printing type (two sizes larger than the type used for this volume). The word is of French origin (*mignon*, a darling) and, in its usual acceptation, signifies the favourite of a prince, on whom he lavishes undeserved favours.

MIN'ISTER, the pastor of a church, duly authorized to perform religious worship in public, administer the sacraments, &c. ——In politics, one to whom a sovereign prince intrusts the administration of the government; as, a *minister of state*; the *prime minister*; or a *foreign minister*. In Great Britain, the words *ministers* and *ministry* are used as collective names for the heads of departments in the state, but the individual members are not so designated. In their separate offices they stand thus: 1. first lord of the treasury; 2. lord high chancellor; 3. chancellor of the exchequer; 4. secretary of state for foreign affairs; 5. secretary of state for the colonial department; 6. secretary of state for the home department; 7. president of the council; 8. lord privy seal; 9. first lord of the admiralty; 10. president of the board of control; 11. paymaster of the forces; 12. secretary at war; and 13. chancellor of the duchy of Lancaster. The prime minister (who is generally the first lord of the treasury) is the one who receives the sovereign's order to form a ministry, or, in other words, to appoint men of his own sentiments to fill the chief offices. Those of the ministry who are peers sit in the house of lords; the others sit in the house of commons, in virtue of being elected members, which is indispensable.——*Foreign minister*, a person sent from one government to another, and accredited to the latter, in order to transact public business in the name of his government. [See AMBASSADOR, and DIPLOMACY.]

MIN'IUM, the red oxyde of lead, procured by exposing this metal to a great heat and a free access of air. It contains sulphate and muriate of lead, oxyde of copper, silex, &c.

MINK, in zoology, a quadruped of the genus *Mustela*, inhabiting the northern parts of Europe and also America. It can swim and dive well, and is generally to be found on the banks of rivers, where it preys upon small fish, frogs, rats, mice, &c. Its fur is fine, but not very valuable. When irritated, the mink exhales a fetid musky smell.

MIN'NESINGERS, a name given to the German lyric poets of the middle ages, on account of love being the chief subject of their poems, the ancient German word *minne* being used to denote a pure and faithful love. After the fashion of the Provençal troubadours, the minnesingers engaged in poetical contests for the gratification of princes and ladies of the court. Some among them were poor, and earned their living by reciting their songs from court to court; but most of them sang merely for pleasure when their swords were unemployed.

MIN'NOW, in ichthyology, the name applied to several species of small freshwater fish, generally of the genus *Cyprinus*.

MI'NOR, in law, an heir male or female, under the age of twenty-one.——*Minor*, in logic, the second proposition of a regular syllogism.——*Minor*, in music, signifies *less*, and is applied to certain concords or intervals which differ from others of the same denomination by half a tone.

MINOR'ITY, in law, a state of being under age. Also the smaller number of persons who give their votes on any questions, particularly in parliament: opposed to *majority*.

MINT, in British history, a place where the national coinage is performed. In minting, or coining money, the first process is that of melting metal in crucibles and pouring it into moulds, where it is formed into plates. The plates are afterward passed through a flatting-engine, by which their thickness is regulated. They are next, with the assistance of an instrument called a trepan, cut into planchets, or circular pieces. The planchets are then duly weighed; and, being boiled and made clean, conveyed to the mill, by which their edges are marked. The coining apparatus of the Royal Mint of London is justly esteemed a masterpiece of mechanical skill and workmanship. It was erected in 1811, under the direction of the inventor, Mr. Boulton; and has since been kept in almost constant employment. Coins, of sufficient thickness, sometimes receive inscriptions on their edges; but others only a small pattern, commonly called the *milling*. The coining-mill stamps the effigy, symbol, or legend required. This machine is so expeditious, that twenty thousand planchets may be stamped in a day. "The only attention which this noble



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IN ALL CASES WHERE WE ARE TOTALLY IGNORANT OF NATURE, IT IS IMPOSSIBLE TO DETERMINE WHAT IS, OR IS NOT, A DEVIATION FROM ITS COURSE.

machine requires," says Dr. Ure, "is that of a little boy, who stands in a sunk place before the press, and always keeps the tube full of blanks. He has two strings, one of which, when pulled, will put the press in motion by the concealed mechanism in the apartment above; and the other string, when snatched, stops the press. This coining operation goes on at the rate of 60 or 70 strokes per minute; and with very few interruptions during the whole day. The press-room at the Royal Mint contains eight machines, all supported on the same stone base; and the iron beams between the columns serve equally for the presses on each side. The whole has therefore a magnificent appearance. The eight presses will strike more than 19,000 coins in an hour, with only a child to supply each."

MINT, or MEN'THA, in botany, a genus of herbaceous plants, whose roots are perennial, used for culinary and medicinal purposes. There are nineteen species, all of which contain much essential oil, and have an agreeable odour. To the taste they are bitter, aromatic, and pungent. The *mentha piperita*, or peppermint, is the most powerful, and, on this account, is most generally employed in medicine. The *mentha viridis*, or spearmint, is milder, and more commonly employed for culinary purposes.

MIN'UET, a dance in slow time and with short measured steps, which requires great dignity and grace of carriage.

MIN'UTE, the sixtieth part of the degree of a circle, and denoted thus ('); as a second, or sixtieth part of a minute, is by (''). Also, the sixtieth part of an hour. We often speak both of *minutes* and *moments* in order to convey a meaning of time indefinitely short; as, "I will be with you in a minute," &c.——*Minute*, in arcitecture, usually denotes the sixtieth, sometimes the thirtieth part of a module.——*Minute* is also used for a short memoir, or sketch of a subject, taken in writing; a note to preserve the memory of a thing.

MINU'TIÆ (Latin), the smaller particulars or minute details of anything.

MIRABI'LIS, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are perennials, and consist of the varieties of the Marvel of Peru.

MIR'ACLE, an event or effect produced in a manner different from the common and regular method of providence, by the interposition either of God himself, or some superior agent to whom He delegated the power. Lord Bacon observes, that a miracle was never wrought by God to convert an atheist, because the light of nature might have led him to confess a God: but miracles, says he, are designed to convert idolaters, and the superstitious, who have acknowledged a deity, but erred in the manner of adoring him; because no light of nature extends so far as fully to declare the will and true worship of God. In examining the different objections which have been urged against miracles, it will be seen that they arise, in general, from a neglect of the existence of a moral system: when it is objected that they are against the "usual course of nature," that is, against all we know of the government of God, it is forgotten that they are entirely in accordance with his moral government, and that experience as fully proves the existence and nature of this government, as of the physical system of the world.

MIRAGE, an optical phenomenon, produced by refraction, and which consists in the unusual elevation or apparent approximation of coasts, mountains, ships, or other objects, accompanied by inverted images of the same The appearance presented is that of a double image of the object in the air; one being in the natural position, the other inverted, so as to resemble a natural object and its inverted image in the water. It may be produced whenever the rays of light meet, in an oblique direction, the surface of a less refracting medium than that in which they were previously moving: they are thus turned back into the original medium in the same direction in which they would be impelled by reflection taking place at the common surface of the two mediums.

MIR'ROR, in optics, the surface of any polished metal, or glass silvered on its posterior side, so as to reflect the rays of light which fall upon it, and to represent objects. Mirrors are either flat, as looking-glasses; concave, for the purpose of converging the rays of light; or convex, for the purpose of diverging the rays of light. The objects viewed in convex mirrors are diminished, but seen in an erect position, and appear to emanate from a point behind the mirror: this point, which is its focus, will be half the radius of convexity behind the surface, and is called the *negative* or *imaginary* focus because the rays are not actually collected as by a concave mirror, whose focus is called *real*.—It is probable that brazen mirrors were the first kind used, but silver reflects the most, though it is too expensive a material for common use; most metals, however, and even wood gilded and polished, will reflect very powerfully; but since the invention of glass, and the application of quicksilver to it, it has been universally employed for plain mirrors in houses.

MISCELLA'NEÆ, the term given to one of Linnæus's natural order of plants, comprehending such as were not included in the other orders.

MISCH'NA, or MIS'NA, the code or collection of the civil law of the Jews. The Jews pretend, that when God gave the written law to Moses, he gave him also another not written, which was preserved by tradition among the doctors of the synagogue, till through their dispersion they were in danger of departing from the traditions of their fathers, when it was judged proper to commit them to writing.

MISDEMEAN'OUR, in law, a minor offence, or one of less magnitude than that which is generally designated a *crime*, the latter being, in common usage, made to denote an offence of a more atrocious character.

AS ONE PLAIN MIRROR REFLECTS THE HEAT OF THE SUN, SO THE REFLECTION OF TWO, THREE, OR MORE, NECESSARILY AUGMENTS THE HEAT.



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NEARLY HALF A MILLION OF MONEY IS ANNUALLY COLLECTED IN GREAT BRITAIN AMONG THE RELIGIOUS ASSOCIATIONS FOR MISSIONARIES.

MISERE'RE, a title given to the 51st psalm, usually called the Psalm of Mercy.

MIS'LETOE (*viscum album*), in botany, a plant which always grows on trees, and was formerly thought, on that account, to be an excrescence of the tree; but it has been found to be propagated by the seed or berry which is conveyed by the missel thrush from one tree to another: probably the viscous part of the berry sticks to his beak, and in his attempts to disengage himself from it by striking his beak against the bark of the tree, the berry sticks to the latter; and if it happen to light on a smooth part, it will take root, and sprout out the next winter. The misletoe was held sacred by the Druids, because they had an extraordinary reverence for the number *three;* and not only the berries, but the leaves of the misletoe, grow in clusters of three united on one stalk. Its growing upon the oak, their sacred tree, was doubtless another cause of its veneration. When the end of the year approached, the Druids marched with great solemnity to gather the misletoe of the oak, in order to present it to Jupiter, inviting all the world to assist them at this ceremony, with these words: "The new year is at hand, gather the misletoe."

MISNO'MER, in law, a misnaming or mistaking a person's name. The christian name of a person should always be perfect, but the law is not so strict in regard to surnames, a small mistake in which will be overlooked.

MISPRIS'ION, in law, any high offence under the degree of capital, but bordering thereon.——*Misprision of treason* consists in a bare knowledge and concealment of treason, without assenting to it. Misprisions are called *negative*, when they consist in the concealment of something that ought to be revealed; and *positive*, when they consist in the commission of something which ought not to be done.

MIS'SAL, in the Romish church, the book which contains the prayers and ceremonies of the mass. Some early missals are beautifully executed, and are objects of bibliomania.

MISSA'LIA, the money paid to a Catholic priest for a mass read for the dead.

MISSIL'IA, in antiquity, were a certain kind of largesses thrown amongst the Roman people, such as small coins of gold or silver, sweetmeats, &c. Sometimes animals, as sheep, goats, oxen, deer, &c. were let loose to be caught and carried off by the populace.

MIS'SIO, among the Romans, was a full discharge given to a soldier after twenty-years' service, and differed from the *exauctoratio*, which was a discharge from duty after seventeen years' service.——*Missi* also signified a rescue sent by the emperor or person who exhibited the games, to a wounded gladiator.

MIS'SIONS and MIS'SIONARIES. All religious communities, from the earliest ages of Christianity, have endeavoured to propagate their tenets, not by the force of arms, but by the persuasive precepts of the Gospel; and there is scarcely a corner of the habitable globe which has not been penetrated by men expressly sent out to carry its glad tidings to pagan nations. Foremost among the Protestant countries which have thus distinguished themselves, is England; and the missionary system has undoubtedly contributed much to the diffusion of the Gospel, though it cannot be denied that, in the choice of persons and in the objects proposed, many mistakes have been committed, through partial views or misdirected zeal. Generally speaking, however, great success has attended their labours; and the immense funds which are annually raised by voluntary contribution for the respective missions, must be a convincing proof that their supporters are actuated by an earnest desire to see the blessings of Christianity and civilization universally extended.

MISTS, or FOGS, vapours hovering over the earth, which are either drawn upwards by the rays of the sun, or fall down by their own weight as dew, or, in cold weather, as hoar frost. [See CLOUDS, FOGS, &c.]

MITE, in entomology, an insect belonging to the genus *Acarus*, so small that it is scarcely visible to the naked eye, except by its motion. As seen through a microscope, it is found to have eight legs, two eyes, one on each side the head, and two jointed tentacula. The mites inhabiting cheese are so minute that to the naked eye they appear like moving particles of dust. They are extremely voracious, and will even prey on each other, and are so tenacious of life that they have been kept alive for many months between object-glasses of a microscope.——*Mite*, in commerce, a small coin formerly current, equal to about one-third part of a farthing. In Scripture, the piece of money called a *mite*, was the quarter of a denarius, or about seven English farthings.

MITH'RIDATE, in pharmacy, an antidote against poison, or a composition in form of an electuary, supposed to serve either as a remedy or a preservative against poison.

MI'TRA, in antiquity, a cap or covering for the head, worn by the Roman ladies, sometimes by the men, but it was looked upon as a mark of effeminacy in them, especially when it was tied upon their heads. Amongst the Greeks, *mitra* was a piece of defensive armour made of brass, lined with wool, and worn next to the skin, under the coat of mail.

MITRA'LES VAL'VULÆ, in anatomy, two valves situated in the left ventricle of the heart, at the ingress of the pulmonary vein, serving to hinder the ingress and regress of the blood from the heart into the veins again, while they are constricted.

MI'TRE, a sacerdotal ornament worn on the head by bishops and certain abbots on solemn occasions; being a sort of cap, pointed, and cleft at top. The high priest among the Jews wore a mitre or bonnet on his head. The inferior priests among the Jews had likewise their mitres, but in what particulars they differed from that of the high priest is at this time uncertain. Some

THE SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE WAS FOUNDED IN 1699; THAT FOR THE PROPAGATION OF CHRISTIANITY IN FOREIGN PARTS, IN 1701.



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THOSE WHO WISH TO STUDY MNEMONICS SHOULD CONSULT A WORK, ENTITLED "HISTORICAL TABLETS AND MEDALLIONS," BY MR. J. TODD, OF WINCHESTER.

THE MODEL OF THE BATTLE OF WATERLOO, EXHIBITED AT THE EGYPTIAN HALL, PICCADILLY, IS A WONDERFUL SPECIMEN OF PATIENCE AND INGENUITY.

writers contend that the ancient bishops wore mitres, but this also admits of considerable doubt. Among the primitive Christians, there was a class of young women who professed a state of virginity and were solemnly consecrated thereto, who wore a purple and golden mitre, as a badge of distinction. His holiness the pope has four different mitres, which are more or less richly adorned, according to the solemnities of the festivals on which they are worn. The cardinals anciently wore mitres, and some canons of cathedrals in Roman Catholic countries have the privilege of wearing the mitre. According to several authors, it was at first a part of female costume, and when worn by a man was considered as indicative of effeminacy.

MITTIMUS, in law, a precept or command in writing under the hand and seal of a justice of the peace, or other proper officer, directed to the gaoler or keeper of a prison, for the receiving and safe keeping of an offender charged with any crime until he be delivered by due course of law.

MIXED BODY, in philosophy and chemistry, that which is compounded of different elements or principles; in which sense it stands distinguished from *simple* or *elementary*, or bodies consisting of one principle only.

MIXTURE, in pharmacy, a liquid medicine which receives into its composition not only extracts, salts, and other substances dissolvable in water, but powders, &c., which are not dissolvable.

MNEMON'ICS, the art of assisting the memory—an art which, when founded on a simple system, is of incalculable use to all persons, but more especially to those who wish to study history and the sciences to advantage. The ancients were well acquainted with mnemonics; according to some, the science came from the East to the Greeks; others consider the poet Simonides as the inventor of them.—The principal difficulty in attaining a competent knowledge of history, consists in retaining the dates of the several epochas, eras, &c. to which the principal occurrences in history belong; but this difficulty is considerably obviated by "memorial lines," made up of artificial words, invented, or adopted by Dr. Grey, in a work entitled "Memoria Technica," which was first published upwards of a century ago. "Of all things," says a celebrated philosopher and scholar, "there is the greatest difficulty in retaining *numbers*. They are like grains of sand, which will not cohere in the order in which we place them; but by transmuting the figures into letters, which easily cohere, in every form of combination, we fix and retain numbers in the mind with the same ease and certainty with which we remember words." And it is to this end, chiefly, that the Memoria Technica is directed.

MOAT, in fortification, a deep trench or ditch, dug round the ramparts of a fortified place, to prevent surprises. The brink of the moat next the rampart, is called the *scarp*; and the opposite one, the *counterscarp*.

MO'CHA-STONE, in mineralogy, *dendritic agate*; a mineral, in the interior of which appear delineations of shrubs destitute of leaves, and which are either of a brown, black, or green colour. In some cases these may have been produced by the filtration of the oxydes of iron and manganese; but in other cases they appear to be vegetable fibres, sometimes retaining their natural form and colour, and sometimes coated by a ferruginous crust.

MOCK'ING-BIRD (*turdus polyglottos*), the American thrush. Although this bird cannot vie with most of the feathered tribe in America in brilliancy of plumage, it is much sought for on account of its wonderful imitative powers. Its own natural song is bold, full, and exceedingly varied; but in addition to the fullness and melody of its original notes, it has the faculty of imitating the notes of all other birds, from the humming-bird to the eagle. In measure and accent it faithfully follows its originals, while in force and sweetness of expression it greatly improves upon them. A bystander might suppose that the whole feathered tribes had assembled together on a trial of skill, each striving to produce his utmost effect, so perfect are the mocking-bird's imitations.

MODE, in metaphysics, denotes the manner of a thing's existence, which is either simple or mixed. Simple modes are only combinations of the same simple idea: thus by adding units together, in distinct separate collections, we come by all the several modes of numbers, as a *dozen*, a *score*, a *thousand*, &c. Mixed modes, on the contrary, are compounded of simple ideas of different kinds, as *beauty*, which consists in a certain composition of colour and figure, causing delight in the beholder. —*Essential*, or *inseparable Modes*, are attributes without which the substance cannot subsist, as wisdom, &c. in God, &c.—*Non-essential*, or *separable Modes*, are attributes affecting created substances, and affixed thereto as long as is necessary, as coldness in water, &c.—*Mode*, in music, a regular disposition of the tune in relation to certain principal sounds, which are called the essential chords of the bass, or the essential sounds of the *mode*.—The word *mode* is applicable also to particular acts, or a series of acts, or to the common usage of a place or people. We say, this person has a particular *mode* of dressing his hair; that one has a certain *mode* of walking, &c.; or, we find it necessary to conform to the usual *mode* of living.

MOD'EL, an original pattern, or the shape or design of anything in miniature: particularly applied to an artificial pattern made in wood, stone, plaster, or other material, for the more correct execution of some great work, and to afford an idea of the effect to be produced. Living models, for the purpose of studying the play of the muscles, the varieties of expression, and the relative proportions of the human form, are provided in all academies for painting.

MODERA'TOR, a person who presides



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at a public assembly, to propose questions, preserve order, and regulate the proceedings. Thus the president of the annual assembly of the church of Scotland is styled the *moderator*.

MOD'ESTY, that amiable state of feeling which accompanies a moderate estimate of one's own qualities, and manifests itself in unobtrusive manners—conceding to others all due honour and respect, and assuming less to one's self than others are disposed to yield. Though it may partly arise from timidity and diffidence, genuine and unaffected modesty is mainly derived from true humility and purity of mind—the sources of honour and human excellence.

MODIFICA'TION, in philosophy, that which modifies a thing, or gives it this or that manner of being. Quantity and quality are accidents which modify all bodies. According to Spinosa's system, all the beings that compose the universe are only so many different modifications of one and the same substance; and it is the different arrangement and situation of their parts, that make all the difference between them.

MODIL'LION, in architecture, an ornament in the cornice of the Ionic, Corinthian, and Composite columns; a sort of bracket serving to support the projecture of the larmier or drip.

MO'DIUS, a Roman dry measure for all sorts of grain, containing 32 *hemina* or 16 *sextarii*, or one-third of the *amphora*, amounting to an English peck.

MO'DO ET FOR'MA (in manner and form), in law, are words frequently used in pleadings, &c. and particularly in a defendant's answer, wherein he denies to have done what is laid to his charge, as affirmed by the plaintiff.

MODULA'TION, in music, the art of composing agreeable to the laws prescribed by any particular key, or of changing the mode or key. Also the regular progression of several parts through the sounds that are in the harmony of any particular key, as well as the proceeding naturally and regularly from one key to another. In pieces of a mild and quiet character, it is not proper to modulate so often as in those which have to express violent and great passions. Where everything relating to expression is considered, modulation also must be so determined by the expression, that each single idea in the melody shall appear in the tone that is most proper for it.

MOD'ULE, in architecture, a certain measure, taken at pleasure, for regulating the proportions of columns, and the symmetry or disposition of the whole building. The usual module of a column is its semidiameter at the base.

MO'DUS, an equivalent in money, land or other valuable consideration, given to the minister or vicar by the owners of land in lieu of tithes. The whole phrase is *modus decimandi*, though *modus* alone is generally used.

MO'DUS OPERAN'DI, a Latin phrase, signifying the way or method by which an operation or performance of any kind is effected.

MOGUL', the name of a prince or emperor of a nation in Asia called Moguls or Monguls.

MO'HAIR, the hair of a goat, which inhabits the mountains in the vicinity of Angora in Turkey, of which the natives make the cloth called camlets or mohair.

MO'HAIR-SHELL, in conchology, a peculiar species of *Volute*, resembling on the surface mohair, or a close web of the silkworm.

MOHAM'MEDANS. [See MAHOMETANS.]

MOI'DORE, a Portuguese coin equal to 27*s.* sterling.

MOLA'RES, or DENTES MOLARES, *Molar teeth*, in anatomy, the large teeth, sometimes called the grinders.—*Molar glands*, two salival glands, situated on each side of the mouth.

MOLE, a mound or massive work formed of large stones laid in the sea by means of coffer-dams, extended in a right line or as an arch of a circle, before a port, which it serves to defend from the violent impulse of the waves; thus protecting ships in a harbour. The word is sometimes used for the harbour itself. Among the Romans, a kind of mausoleum, built like a round tower on a square base, insulated, encompassed with columns, and covered with a dome.

MOLE, in zoology, a small animal of the genus *Talpa*, from five to six inches in length, which, in search of worms or other insects, forms a road just under the surface of the ground, raising the soil into a little ridge. Its conformation enables it to burrow with great ease; it has no external ears; and its eyes are so minute, and so concealed by its fur, that it has given rise to the opinion that it is formed without these important organs. Moles live in pairs, and are chiefly found in places where the soil is loose and soft. The females bring forth four or five young, for the preservation of which the parents construct a habitation, or nest, with great diligence and ingenuity.—*Mole-hill*, a little mound or elevation of earth thrown up by moles working under ground.

MO'LE-CRICKET, in entomology, an insect of the genus *Gryllus*, noted for its rapidity in burrowing, as well as for its destructiveness in gardens. The female forms a nest of clay, about as large as a hen's egg, and deposits in it nearly 150 eggs, for the preservation of which the greatest care is taken. Wherever a nest is situated, avenues and intrenchments surround it; there are also numerous winding passages which lead to it, and the whole is environed by a ditch, which presents an impassable barrier to most insects. At the approach of winter, the mole-crickets remove their nests to so great a depth in the earth as to avoid any injury from the frost. When the mild season returns, they raise it in proportion to the advance of the warm weather, and at last elevate it so near the surface as to permit the sun and air to act on it. The male has a chirp, or low jarring note, which may be heard in the evening or night.



A BEAUTIFUL MODEL WAS MADE, IN WOOD, OF THE NEW TOWN OF EDINBURGH, BEFORE ANY PART OF IT WAS BEGUN TO BE BUILT.

THERE ARE TWO DISTINCT KINDS OF MOLLUSCOUS ANIMALS, THOSE WITH A HEAD CALLED "CEPHALOUS," AND THOSE WITHOUT, OR "ACEPHALOUS."

MOLLITIES OSSIUM, in medicine, a diseased state of the bones, in which they are preternaturally soft.——*Mollities Unguium*, a preternatural softness of the nails.

MOLLUSCA, in zoology, a class of animals whose bodies are soft, without an internal skeleton, or articulated covering. Some of them breathe by lungs, others by gills; some live on land, others in water. Some are testaceous or provided with shells, as the snail, others naked. Most of the mollusca are possessed of great irritability, frequently continuing apparently alive after they are cut asunder. Some produce their young alive, while others are oviparous. The uses of this numerous class are extremely varied: many of them are taken as food by man, and others supply nutritious prey for birds and fishes.

MOLYB'DENA, in mineralogy, an ore of *molybdenum*, a scarce mineral of a peculiar form, and sometimes confounded with plumbago, from which however it is distinguished by its more shining, scaly appearance.

MOLYB'DENUM, in mineralogy, a metal which has not yet been produced in masses of any considerable magnitude, but has been obtained only in small separate globules, of a blackish, brilliant colour. It unites with several of the metals, and forms with them brittle compounds.—— The *molybdic acid* has a sharp metallic taste, reddens litmus paper, and forms salts with alkaline bases.

MOMENTUM, in mechanics, the power displayed by any body in a certain direction, always measured by the velocity, and increased or diminished by the number of atoms; and, therefore, is as the velocity multiplied by the quantity.

MON'ADE, an atom no longer divisible.

MONADELPH'IA, in botany, the sixteenth class of the Linnæan system of plants, containing eight orders, *triandria*, *pentandria*, *octandria*, *enneandria*, *decandria*, *endecandria*, *dodecandria*, and *polyandria*, with the stamens united into one body by the filaments.

MONAN'DRIA, in botany, the first class of plants, with only one stamen or male part in each flower. The monandria are subdivided into two orders, *monandria-monogynia*, and *monandria-digynia*, according as they contain one or two styles.

MON'ARCHY, a government in which the supreme power is vested in a single person. Where the monarch is invested with an absolute power, the monarchy is termed *despotic*: where the supreme power is virtually in the laws, though the majesty of government and the administration is vested in a single person, it is a *limited* monarchy. It is *hereditary*, where the regal power descends immediately from the possessor to the next heir by blood, as in Great Britain; or *elective*, where the choice depends upon all who enjoy the benefit of freedom, as was formerly the case in Poland.

MON'ASTERY, a convent, or house of religious retirement, for the reception of monks or nuns; and governed by different rules, according to the different regulations prescribed by their founders. Monasteries were first founded in the deserts of Upper Egypt, where Antony, commonly called the *Great*, collected a number of hermits, about the year 305, who, for the sake of enjoying the benefits of retirement from the world in each others' society, built their huts from each other, and performed their devotional exercises in common, as the monks of Palestine did at a later period, and as those of Abyssinia do at the present day. The number of monasteries was much diminished at the time of the Reformation, when the rich estates of the establishments which were deserted by the monks and nuns, in Protestant states, were in part appropriated by the sovereign to his own use, and partly devoted to the founding and supporting of institutions for the purposes of education. In Catholic countries, they retained their original constitution till the 18th century; but from the influence of the spirit of the age, they sank in the public estimation, and were obliged, as the papal power diminished, to submit to many restrictions imposed on them by Catholic princes, or to purchase immunity at a high price.

MON'DAY, the second day of the week, so called from being anciently sacred to the moon.

MONETA'RII, in antiquity, officers of the mint amongst the Romans, who presided over the management of the metal and stamping the coin.

MON'EY, the portable and standard equivalent for commodities, labour, and values transferred. It consists either of coins, or pieces of stamped metal, or of paper money or moneys of account. Among modern commercial nations, gold, silver, and copper are the only metals used for this purpose. Paper money is called paper currency, to distinguish it from specie, metallic currency, or cash: it comprehends notes of hand, bills of exchange, bonds, mortgages, &c. Moneys of account are imaginary moneys, used only in keeping accounts; such was the English pound until sovereigns were coined. When it is plentiful, with reference to commodities and labour, they are said to be dear; but when commodities and labour are plentiful in reference to money, they are said to be cheap; dearness and cheapness being mere relative terms. Money is profitable to a country only by its circulation; for circulation makes money the continually repeated cause of the production of new portions of property; and, on this account, a small sum of money, in constant circulation, is of far more benefit to a country than the possession of the largest sums which remain locked up, and do not change owners. The only true means of permanently preventing a scarcity of money, is to improve the state of internal and domestic industry; and their opinion is wholly destitute of foundation, who believe that a mere plenty of money is sufficient to



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THE NUMBER OF RELIGIOUS HOUSES, COLLEGES, CHANTRIES, &c. SUPPRESSED IN ENGLAND AT THE REFORMATION, IS STATED TO BE UPWARDS OF 3180.

THE FIRST SHILLINGS WERE COINED BY HENRY VIII., AND WERE CALLED TESTOONS: HALF-CROWNS, SIXPENCES, AND THREEPENCES, BY EDWARD VI.

develop a healthy state of domestic industry; for the money does not produce the goods, but follows their production.—In the most ancient times, it is certain, all commerce was managed by way of barter. There was always a necessity, however, for a sort of common measure, by which to estimate the value of commodities. The first inhabitants of the earth were almost all shepherds and husbandmen: they therefore made that common measure to consist of a certain portion of their flocks, which was considered *tanquam pretium eminens:* and any commodity was said to be worth so many sheep, oxen, &c. It was afterwards found more expedient to express the value of most commodities by bits of leather, which by their marks showed the number of beasts they were worth. This was the first money, and the origin of all coins. Silver money was not used at Rome till the 485th year after the building of the city—and gold was first coined in the year 546, during the consulship of Nero and Salinator. Julius Cæsar was the first whose head was stamped upon money, by order of the senate. The first coined money regularly minted, and properly so called amongst the Jews, was in the time of Judas Maccabæus, who had leave given him by Antiochus Sidetes, to coin money of his own in Judea. Payments, before this, had always been made by weight: hence the correspondence between the names of their sums and the names of their weights. The English word money is derived from the Latin *moneta*, which was a name given to money by the Romans, because they kept their silver money in the temple of Juno Moneta.

MON'ITOR, in zoology, a genus of large lizards, which have teeth in both jaws, and none on the palate; most of them have the tail compressed laterally: they derive their name from a popular belief that they give warning of the approach of crocodiles, by making a kind of whistling noise. They are found in most parts of the world, and the fossil remains of species much larger than any now existing, have been discovered in various places in Europe.

MON'ITORY *Letters*, are letters of warning and admonition, sent from an ecclesiastical judge, upon information of scandals and abuses within the cognisance of his court.

MONK, one of a religious society who dwells in a monastery, under a vow of observing the rules of the order he belongs to.

MON'KEY, the general name of the ape, baboon, and simia tribe, the several varieties of which are principally found in the tropical climates. They inhabit forests in prodigious numbers, and, though mischievous and filthy, their manners are fantastical and interesting. They have hands like man, and can walk on two legs, but they practise no arts beyond what are suggested by the necessities of the hour. They are affectionate to their young, and often exhibit great sagacity. Most of the species are gregarious, associating in large troops; but each troop is invariably formed of the same species. They throw missiles with great dexterity, and live on vegetables.——*Monkey*, a machine used for driving large piles of wood.

MONK'S'HOOD, or *Aconite*, in botany, a poisonous plant bearing a fine blue flower.

MONO'CEROS, in astronomy, one of the new constellations in the northern hemisphere.

MON'OCHORD, a musical instrument originally having but one string, as its name imports; but it is now generally constructed with two, by means of which the musician is better enabled to try the proportions of sounds and intervals, and judge of the harmony of two tempered notes.

MONOCHROMAT'IC, in optics, presenting rays of light of one colour only.

MON'OCHROME, an ancient mode of painting in which only one colour is used. The most numerous monuments existing of this kind of painting are on terra cotta.

MONOCOTYL'EDON, in botany, a plant with only one cotyledon, or seed-lobe.

MONOC'ULUS, a genus of water insects, of which there are about fifty species in stagnant waters.

MON'ODON, in ichthyology, the sea-unicorn, which has a remarkable tusk or horn projecting from its head. Its usual size is from 16 to 20 feet, and it is sometimes called the *horned narwhal* or *monoceros*.

MONOE'CIA, in botany, the twenty-first class of the Linnæan system of plants, containing eleven orders, *monandria, diandria, triandria, tetrandria, pentandria, hexandria, heptandria, polyandria, monadelphia, syngenesia, gynandria*, with stamens and pistils distinct in the same plant.

MONOG'AMY, the state or condition of those who have only been once married, and are restrained to a single wife.

MON'OGRAM, in archæology, a character or cipher composed of one, two, or more letters interwoven, being an abbreviation of a name; anciently used as a seal, badge, arms, &c. Printers, engravers, &c. formerly made use of monograms to distinguish their works.

MON'OGRAPH, a treatise on a single subject in literature or science.

MONOGYN'IA, in botany, the first order in each of the first thirteen classes in the Linnæan system, comprehending plants that have only one pistil or stigma in a flower.

MONOLITH'IC, consisting of a single stone. Some striking specimens of monolithic temples have been found in Egypt, and bear testimony to the wonderful application of mechanical power among that ancient people.

MON'OLOGUE, a dramatic scene, in which a person appears alone on the stage, and soliloquizes.

MONOMA'NIA, the name given, by some physicians, to that form of mania in which the mind of the patient is absorbed by one idea.

MONO'MIAL, in algebra, a root or quantity that has but one name, or consists of only one member.



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**MONOPET'ALOUS**, in botany, an epithet applied to flowers that have only one petal or flower-leaf.

**MONOPH'YLLOUS**, in botany, having but one leaf.

**MONOPH'YSITE**, one who maintains that Jesus Christ had but one nature, or that the human and the divine nature were so united as to form one nature only.

**MONOPO'LY**, an exclusive right, secured to one or more persons, to carry on some branch of trade or manufacture; or the sole power of vending any species of goods, obtained either by engrossing the articles in market by purchase, or by a license from the government. The most frequent monopolies formerly granted, were the right of trading to certain foreign countries, the right of importing or exporting certain articles, and that of exercising particular arts or trades. This at length became an enormous grievance, and was abolished by an act of parliament in 1624, which act did more, perhaps, to excite a spirit of invention and industry, and to accelerate the progress of wealth, than any other law in existence. There is, however, one species of monopoly, sanctioned by the laws of all countries that have made any advances in the arts—the exclusive right of an invention or improvement for a limited number of years.

**MON'OTHEISM**, the doctrine or belief of the existence of one God only: opposed to *polytheism*, or a plurality of gods. All the different mythologies have, among the host of gods with which they people heaven and earth, some supreme God, more or less defined, but, in every case, distinguished above the others. And in every instance we see, in these mythologies, the gods gradually multiplied, as man departed farther and farther from the simple and original revelation, till lost in the multitude of deified personifications which he himself had created.

**MON'OTONE**, in rhetoric, a sameness of sound, or the utterance of successive syllables on one unvaried key, without inflection or cadence.

**MONSOO'NS**, periodical winds in the Indian sea, that blow one half the year from the same quarter or point of the compass, and the other half from the opposite point. The change of the winds, or the breaking up of the monsoons, as it is called, is accompanied by storms and hurricanes. The points and times of shifting are different in different parts of the ocean. The monsoons which prevail in the East-Indies are called *trade winds*; and so are the winds which blow the whole year from the same point, as the winds within the tropics on the Atlantic.

**MON'STER**, in physiology, any creature whose formation deviates in some remarkable way from what is natural to the species; sometimes in a malformation of the whole or some portion of the system, and sometimes in the presence of organs or parts not necessary thereto.

**MON'TEM**, a singular celebration which takes place at Eton on Whit-Tuesday every third year. The scholars of the college march in procession to Salt-hill, where their captain (the best scholar) recites a passage from some ancient author. The young gentlemen, called *salt-bearers*, who are arrayed in fancy dresses, then disperse in various directions, to collect money from all passengers, not allowing any one to pass without giving some thing. The money thus collected, which usually amounts to several hundred pounds, is given to the captain, to enable him to take up his residence at one of the universities. The royal family and a splendid company generally attend the ceremony.

**MONTH**, in chronology, the twelfth part of a year, otherwise called a *calendar* month, to distinguish it from the astronomical month, which is either solar or lunar. A *solar month*, or the time in which the sun passes through a whole sign of the zodiac, is 30 days, 10 hours, 29 minutes, 5 seconds; a *lunar month*, or the period of one lunation, is 29 days, 12 hours, 44 minutes, 3 seconds. The Romans used lunar months, and made them alternately of 29 and 30 days; and they marked the days of each month by three terms, viz. *calends*, *nones*, and *ides*. A *civil* or *common* month consists of a certain number of days, according to the laws and customs of the different countries wherein it is used, either having no regard to the solar or lunar months, as those of the Egyptians in their equal year, of the Romans in the year of Romulus, &c., or coming pretty near to the solar astronomical month, as the Julian.—In the year there are twelve solar months, and thirteen lunar months. In popular language, four weeks are called a month, being nearly the length of the lunar month.

**MONTMARTRITE**, in mineralogy, a compound of the sulphate and carbonate of lime, existing as a mineral of a yellowish colour, found at Montmartre, near Paris.

**MON'UMENT**, in architecture, a building or erection of any kind, destined to preserve the memory or achievements of the person who raised it, or for whom it was raised; as a triumphal arch, a mausoleum, a pyramid, a pillar, a tomb, &c.——*The Monument*, so called among us, is a magnificent pillar, erected to preserve the memory of the great conflagration of the city of London, in 1666, on the spot where the fire began. This pillar is of Portland stone, of the Doric order, and fluted. It is one of the boldest pieces of architecture ever attempted, being 202 feet high, and 15 feet in diameter. It stands on a pedestal 40 feet high, and 21 feet square, the front being enriched with curious emblems in basso relievo; and within its shaft is a spiral stair of black marble of 345 steps. It was begun in 1671, but was not completed till 1677; stone being scarce, and the restoration of London and its cathedral swallowing up the produce of the quarries. Mr. Elmes, in his Life of Sir Christopher Wren, the architect, tells us that the Monument was "at first used by the members of the Royal Society for astronomical experiments, but was



NO MAN, OR SET OF MEN, HAS SUFFICIENT CAPITAL TO MONOPOLISE THE STAPLE COMMODITIES OF A COUNTRY; IT IS THEREFORE ABSURD TO ATTEMPT IT.

THE HISTORY OF THE HEBREWS AFFORDS THE MOST STRIKING INSTANCE OF THE PRESERVATION OF MONOTHEISM AMID THE CORRUPTIONS OF PAGANISM.

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abandoned on account of its *vibrations* being too great for the nicety required in their observations. This occasioned a report that it was unsafe; but its scientific construction may bid defiance to the attacks of all but earthquakes for centuries."

MOOD (sometimes written *mode*), in grammar, the manner of forming a verb, or the manner of the verb's inflections, so as to express the different forms and manners of the action, or the different intentions of the speaker.

MOON, in astronomy, a secondary planet, or satellite of the earth, whose borrowed light is reflected to the earth, and serves to dispel the darkness of night. The moon and earth are acted upon by the sun as one body, and each moves round the centre of the sun's action. Like the other heavenly bodies, she daily alters her apparent position among the fixed stars, and, in the course of a month, appears to make a complete revolution round the heavens, from west to east, while, at the same time, she has, like the fixed stars, an apparent daily motion from east to west. Amongst all the heavenly bodies, the moon is the nearest to us; the mean distance being estimated at about thirty times the diameter of the terrestrial equator, or 237,000 miles. Her sidereal or periodical motion on her own axis is performed in 27 days, 7 hours, 43 minutes, and 11 seconds; her synodical motion, or her motion in her orbit round the earth, is performed in 29 days, 12 hours, 44 minutes, 12 seconds: the former is called the *periodical*, and the latter the *synodical month*. But since this motion about the axis is equable and uniform, and that about the earth, or common centre of gravity, is unequal and irregular, as being performed in an ellipsis, it must follow that the same part of the moon's surface, precisely, can never be shown constantly to the earth; and this is confirmed by the telescope, through which we often observe a little gore or segment on the eastern and western limbs appear and disappear by turns, as if her body librated to and fro; which therefore occasioned this phænomenon to be called the moon's libration. With regard to the moon's surface, that she has variety of hills and mountains is demonstrable from the line which bounds the light and dark parts not being an even regular curve, as it would be upon a smooth spherical surface, but an irregular broken line, full of indentations; for, we observe many small spots interspersed all over the bright part, some of which have their dark sides next the sun, and their opposite sides very bright and circular, which infallibly proves them to be deep, hollow, round cavities; of which there are two very remarkable ones near together on the upper part, and may be viewed exceedingly plain, when the moon is about four or five days old. The depth of these lunar cavities prodigiously exceeds the height of the mountains, and consequently the surface of the moon has but little resemblance to that of the earth in these respects. The numerous observations of Herschel and Schroter, through a number of years, have put the existence of these beyond dispute: Schroter has even undertaken to determine the elevation of mountains in the moon. The two heights on the southern limb which he called *Leibnitz* and *Dorfel*, he measured by means of the shade which they cast, knowing, at the same time, the sun's elevation with regard to them, and found them to be 26,650 feet high.——The various appearances which the moon periodically presents in the different parts of its revolution, are termed *phases*, and arise from the different positions which its opaque mass assumes in relation to the sun and the earth. When the moon is between the sun and the earth (in which case the sun and moon are said to be in conjunction), she presents her unillumined side to us, and we can see nothing of it. In this state it is called the *new moon*. Four days after the time of new moon, it has receded 45° from the sun; and now a portion of the illumined surface is seen in the shape of a sickle, with the horns towards the sun. After about eight days, it has departed 90° from the sun, and shows a bright semi-circular disk: in this state the moon is said to be in her *first quarter*. The moon now assumes more and more of a circular figure, until, about fifteen days after the time of new moon, when it stands directly opposite the sun, it presents a complete circular disk: this is the *full moon*, rising when the sun sets, and shining through the whole night. From the day of full moon it decreases with each successive day, on the side most distant from the sun, as it is now approaching that luminary at the same rate as it before departed, gradually assuming the sickle shape, with the horns, however, turned from the sun.—The new moons or first days of every month, were kept as festivals amongst the Jews; and they were celebrated with sound of trumpets, entertainments, and sacrifice. We know also that the full moon was held favourable for any undertakings by the Spartans: and no motive could induce them to enter upon an expedition, march an army, or attack an enemy till the full of the moon. —The moon was supposed, both by Greeks and Romans, to preside over childbirth.

To the foregoing notice of our satellite, we subjoin the following article, which has both novelty and interest to recommend it, and for which we are indebted to the columns of the *Athenæum*:—"*Geology of the Moon.*—Captain Portlock, president of the Geological Society of Dublin, being of opinion that information as to the original condition of the surface of the earth might be obtained by an inquiry into the condition of some other planetary body, wrote to Dr. Robinson, of Armagh, on the subject; the following is the Doctor's interesting reply—

'Feb. 7, 1839. Observatory, Armagh.

'My dear Sir,—My general notion is that you are quite right in referring to the moon as evidence of the absence of *weathering*. The sharpness of its rocks and peaks is quite surprising; for every angle and edge



ONE SIDE OF THE MOON NEVER RECEIVES THE REFLECTION OF THE SUN'S RAYS FROM THE EARTH, WHILE THE OTHER IS CONSTANTLY ILLUMINATED BY IT.

THE MOON, NOT BEING ACQUAINTED WITH THE PHYSICAL CAUSES OF ECLIPSES, LOOKED UPON THEM AS SIGNS OF THE DIVINE DISPLEASURE.

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stick out with a ruggedness that is, perhaps, the thing which first strikes an observer with a sense of the wide difference between that globe and the earth. It alone would show that air and water are absent, had we no other evidence. But you are, I think, in error, when you infer from the great height of lunar mountains, the probable *quantity* of the wearing down which our earthly peaks have suffered. The moon has less attractive force than belongs to our planet, so that the same elevating force would do about twenty times as much work; and there is every reason to believe that the elevating forces were far more energetic. Indeed, I regard the appearance of the moon as strong presumption against Mr. Lyell's notion, that the energy of volcanic action is as powerful now as it was in the primeval epochs of our planet. No volcanic action is now at work in the moon; but we see that it was once raging with uncontrollable fury, and on the most prodigious scale. *There*, it has actually worn itself out; here, I think, we may assume that it has merely expended most of its force. I may here tell you of some of the matter which I see, or think I see, on the surface of our satellite. The mountains of earthly shape are some pretty high, the highest peak of the said Apennines being, according to the best authority, something under 17,000 feet above the plains from which it rises; but this is a rare instance, and very few reach 6,000. They are of astonishing steepness. But the Ring mountains, or craters, are much stranger affairs. Take, for instance, Tycho, that bright spot in the south-east quarter, from which the rays seem to run. It is fifty miles in diameter, and 16,000 feet deep, surrounded by broad terraces within, and with a central mountain about 5,000 feet high. Some of the lunar mountains are 200 miles diameter, and one nearly of this size, 22,000 feet deep. What a paroxysm it must have been that hollowed out this monstrous crater! Observe that *all* these craters are depressed below the lunar surface, the elevation of their walls above it being in general but half their depth below it; and the question is, what became of the immense quantity of materials that must have been blown out of them. Schroter thought that the walls, if demolished, would fill the cavities; but this (in Tycho, for instance) is certainly not always the case, and we do not recognize heaps of debris in the vicinity. But we do find a curious appearance sometimes —those rays to which I have already alluded as diverging from particular craters. They are peculiarly bright, but not at all elevated above the lunar surface, and give the idea of a fluid which had run out in currents, and produced some chemical change in the soil over which it passed. As these rays are themselves bristled with craters, these latter must have been of subsequent formation. The long lines terminating in those dusky places which we sometimes hear called seas, have perchance been rivers; but as they generally seem to originate in some *crater*, they were more probably the track of volcanic fluids, which, however, must have been quite different from our lavas, and, perhaps, have played some part in the absorption of the lunar atmosphere, and the removal of its seas. In general the large craters are far more brilliant than the other parts of the moon, and the comparative obscurity of the *seas* arises from the scarcity of volcanic action there. On earth, I believe, our present volcanic products are but little reflective; it is otherwise there; but it may be remarked, that the small craters, which subsequently broke out on the greater and older ones, are much less bright, as if the expiring action had been more analogous to that of our own planet. But this at least is clear, that since the invention of the telescope the moon has been undisturbed.'"

MOON'STONE, in mineralogy, a variety of *adularia*, of a white yellowish, or greenish white colour, and somewhat irridescent, found in blunt amorphous masses, or crystalized in truncated rhomboidal prisms.

MOOR, a native of the northern coast of Africa, called by the Romans, from the colour of the people, *Mauritania*. It embraces the present countries of Morocco, Algiers, Tunis, &c.——*Moor*, an unlimited tract of land, usually overrun with heath and full of bogs.

MOOR'-BUZZARD, in ornithology, the yellow-legged falcon, with an iron-coloured body, and yellow head. It is about the size of a crow, and has its name from building its nest in moorish and boggy places.

MOOR'-COCK, in ornithology, a species of *Tetrao*, with a forked tail, spotted with white underneath. It is a native of England, but very rare: the male is throughout of a very deep iron gray, but the female is variegated with transverse lines of black.

MOOR'INGS, the anchors, chains, &c. laid athwart the bottom of a river or harbour to confine a ship.

MOOR'STONE, in mineralogy, a species of granite.

MOOSE, or the American Elk, an animal of the genus *Cervus*, and the largest of the deer kind, growing sometimes to the height of seventeen hands. It has palmated horns, short thick neck, an upright mane of a light brown colour, small eyes, and very long pendent ears.

MOOT'-CASE, or MOOT'-POINT, an unsettled point or question to be mooted or debated.

MORAL'ITY, the duties of men in their social character; or that rule of conduct which promotes the happiness of others, and renders their welfare accordant with our own. This implies, that our acts must proceed from a motive of obedience to the divine will.——The term *moralities* was given to a kind of allegorical plays, formerly in vogue, and which consisted of moral discourses in praise of virtue and condemnation of vice. They were occasionally exhibited as late as the reign of Henry VIII., and, after various modifications, assumed the form of the *masque*,

which became a favourite entertainment at the court of Elizabeth and her successor.

MOR'ALS, the practice of the duties of life. While civil institutions have regulated the conduct of man in society, religious institutions have penetrated into the sanctuary of conscience. Moral and religious sentiments are developed almost spontaneously, and have a natural sympathy; Christianity having blended them in the precepts of love to God and man. In considering what the moral law enjoins, we soon perceive that there are degrees in our duties. Just as actions may differ in criminality, so may they also differ in merit; and the degree in both cases will depend upon accompanying circumstances; and circumstances are often such as to make it difficult to determine on which side the balance of duty predominates. But though man is often driven to choose between conflicting duties, he is never obliged to choose between two criminal acts.—Moral duties have been distinguished into three great classes: duties to God, to our fellow-men, and to ourselves; but though they may be classified, they are not to be separated. Duties to God comprise, essentially, all our obligations; and when we serve other men, we, in fact, labour for ourselves; so, too, in improving ourselves, we are qualifying ourselves to render the highest service to others.—Practical morality exerts a powerful influence on civilized life, strengthening the ties which unite individuals, fortifying the respect for equity and benevolence, encouraging labour, and assuring its reward by protecting property, favouring the progress of intelligence by nourishing the love of truth, and improving taste by purifying and elevating the sentiment of the beautiful. Civilization, in its turn, promotes practical morality. The closer and more varied the relations among men become, the more sensible do they grow to their mutual duties; while the progress of science aids virtue, by enlightening the mind, and accustoming it to noble and refined pleasures.

MORA'VIANS, otherwise called HERNHUTTERS, or UNITED BRETHREN, a sect of Christians, among whom social polity makes a figure as conspicuous, at least, as religious doctrine. The society of the United Brethren sprung up in Moravia and Bohemia, on the first opening of that reformation which stripped the chair of St. Peter of so many votaries, and gave birth to so many denominations of Christians. Generally speaking, these sectaries adhere to the *Augsburgh Confession*. From the original seat of their doctrine, they are sometimes called *Moravians;* and from a settlement made in Upper Lusatia, about fifty miles eastward of Dresden, they are generally known, on the continent, by the name of *Hernhutters*. Some persecuted brethren having emigrated from Moravia, were received by Nicholas Lewis, count of Zinzendorf, on whose estate they built a town. The ground allotted to them for this purpose was on the side of a hill called *Huthburg*, or *Watch-hill;* whence they took occasion to call their new settlement, *Hernhut*, "The watch of the Lord." The United Brethren are much attached to instrumental as well as vocal music; celebrate agapæ or love feasts; and cast lots, to discover the will of the Lord. These people live in communities, and provide for their poor; but do not make a common stock of their property. They wear a plain, uniform dress, and are extremely methodical in all their concerns.

MOR'BID, among physicians signifies diseased or corrupt, a term applied either to an unsound constitution, or to those parts or humours that are infected by a disease.

MOR'DANT, in dyeing and calico printing, a substance which has a chemical affinity for colouring matter, and serves to fix colours; such as alum. When that which has to be dyed has little or no attraction to the matter on which the colour depends, so as either not to be capable of abstracting it from its solvent, or of retaining it with such force as to form a permanent dye, then some intermediate substance is used, which is capable of uniting them; and such a substance is called a *mordant*. In order properly to appreciate the utility and the true functions of mordants, we must bear in mind that colouring matters are peculiar compounds possessed of certain affinities, their distinctive characters being not to be either acid or alkaline, and yet to be capable of combining with many bodies, and especially with salifiable bases, and of receiving from each of them modifications in their colour, solubility, and alterability. Organic colouring substances, when pure, have a very energetic attraction for certain bodies, feeble for others, and none at all for some. Of all the bases, those which succeed best as mordants are alumina, tin, and oxyde of iron.

MORES'QUE, or MORESK', a kind of painting or carving done after the Moorish manner, consisting of grotesque pieces and compartments promiscuously interspersed.

MOROC'CO, a fine kind of leather, prepared from the skin of the goat, originally brought from the Levant and the Barbary States, but now manufactured in most other countries.

MOROX'YLIC ACID, in chemistry, an acid produced from the trunk of a white mulberry tree, found at Palermo, on which it formed a dark brown coating.

MOR'PHIA, in chemistry, an alkali extracted from opium, of which it constitutes the narcotic principle. With acids it forms a class of salts, in like manner as do the other vegetable alkalies. Morphia acts with great energy on the animal economy.

MORPHOL'OGY, the science which treats of the formation and change of organic bodies.

MOR'RIS-DANCE, (from *Morisco*, Moorish), a dance derived from the Moriscoes in Spain, which was formerly danced at May-games, revels, &c. in England, and an imitation of which, under the same name, is





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still occasionally practised by young men in their shirts, with ribbons tied round the arms and flung across the shoulders. In the reigns of Henry VII. and VIII. it was a principal feature in the popular festivals.

MORSE, in zoology, the sea-horse or walrus, an animal of the genus *Trichechus*, which sometimes grows to the length of 18 feet. These animals are gregarious, but shy, and very fierce when attacked. They inhabit the shores of Spitzbergen, Hudson's Bay, and other places in high northern latitudes.

MORTALITY, *Bills of*, registers of the number of deaths or burials in any parish or district. These were established at the time when the plague made great ravages in London; and they have been continued, from the convenience found in ascertaining by them the precise time of the birth or death of individuals, and for the information they furnish respecting the rate of human mortality.

MORTAR, a short piece of ordnance, thick and wide; used for throwing shells, bombs, carcasses, &c. The use of mortars is thought to be older than that of cannon, as they were employed in the wars in Italy to throw stones and balls of red-hot iron and stones, long before the invention of bombs.——*Mortar*, a preparation of lime and sand mixed up with water, which serves as a cement, and is used by masons and bricklayers in buildings.

MORTGAGE, in law, the conveyance or transfer of a real or personal estate in fee as security for the payment of money, and on the condition that if the money shall be paid according to the contract, the transfer shall be void, and the mortgagee shall reconvey the estate to the mortgager. The creditor, who holds the estate according to the condition of the deed, is called the mortgagee; but the mortgager, who is the person that makes the mortgage, generally keeps possession of the land till failure is made in the payment of the mortgage-money; in which case, though the mortgagee enters for non-payment, the mortgager has a right to the *equity of redemption* in the court of chancery, where he may call the mortgagee to an account for the profits of the land mortgaged.

MORTIFICATION, in medicine and surgery, the death of one part of the body while the rest continues alive, and often in a sound state. Mortification is called *gangrene* and *sphacelus*, when occurring in soft or fleshy parts, as in the stomach or the limbs; and *caries* when in a bone, as in the spine, the skull, &c.

MORTISE, in carpentry, a kind of joint consisting of a hole of a certain depth cut in a piece of timber so as to receive another piece called the tenon.

MORTMAIN, in law, an alienation of lands and tenements to any guild, corporation, or fraternity, and their successors. Lands alienated in mortmain are different from others, for they never revert to the donor, or to any temporal or common use; on which account, by such alienation, the lords lose their escheats, and many services that were formerly due to them; as bodies politic never die, nor can perform personal service, nor commit treason, or felony.

MORTUA'LIUM, in antiquity, the vestments and every thing else which appertains to the dead.

MO'RUS, in botany, a genus of plants, class 21 *Monoecia*, order 4 *Tetrandria*; consisting of different species of mulberry trees.

MO'RUN, in medicine, an excrescence on the skin resembling a mulberry.

MOSA'IC, or *Mosaic work*, small fragments of glass, marble, precious stones, &c. of various colours, cut square, and cemented on a ground of stucco, in such a manner as to imitate the colours and gradations of painting. The beautiful chapel of St. Lawrence in Florence, which contains the tombs of the Medici, has been greatly admired by artists on account of the vast multitude of precious marbles, jaspers, agates, &c., applied in mosaic upon its walls.——*Mosaic*, pertaining to Moses, the leader of the Israelites; as, the *Mosaic* law, &c.

MOSA'IC GOLD, the *aurum musivum* of the old chemists, is a sulphuret of tin: but the composition now called *mosaic gold* or *or-molu*, is a peculiar alloy of copper and zinc, melted at the lowest temperature at which copper will fuse.

MOSQUE, a Mahometan temple, or place of religious worship. All mosques are square buildings, generally constructed of stone, in the Moresque or Saracenic style of architecture. Before the chief-gate is a square court paved with white marble, and surrounded with a low gallery whose roof is supported by marble pillars. In these galleries the Turks wash themselves before they enter the mosque. As it is not lawful to enter the mosque with shoes or stockings on, the pavements are covered with pieces of stuff sewed together, each being wide enough to hold a row of men kneeling, sitting, or prostrate. The women are not allowed to enter the mosque, but stay in the porches without. About every mosque there are six high towers, called minarets, each of which has three little open galleries, one above another: these towers, as well as the mosques, are covered with lead, and adorned with gilding and other ornaments; and from thence, instead of a bell, the people are called to prayer by certain officers appointed for that purpose. The mosques of the Arabs often include, in a quadrangular area, an immense quantity of columns ranged in files, the multiplicity and extent of which impress the mind of the beholder with surprise and admiration. These columns are, in numerous instances, the rich spoils of antique monuments.

MOSSES (*musci*), in botany, a very numerous order of plants, belonging to the *cryptogamia* class, the fructification of which is but little understood. Linnæus, indeed, has attempted to arrange them according to what he takes to be the signs of fecundation, many of which he ac-

HYDRAULIC MORTAR, OR IT IS ALSO CALLED, ROMAN CEMENT, IS USED IN BUILDING THE PIERS OF BRIDGES, WALLS OF DOCKS, &c.

MOSAIC WORK PROBABLY ORIGINATED IN THE EAST, BUT RECEIVED ITS PERFECTION FROM THE GREEKS, AND WAS COMMON WITH THE ROMANS.



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knowledges to be wanting. Hence, in the description of such imperfect plants, it becomes necessary to distinguish them according to their general habit and structure. They consist of little herbaceous plants, having simple or branching stems, which are furnished with very numerous and more or less imbricated leaves: these are always continuous with the stem, and never fall off. Water is absorbed by the leaves very rapidly, and when a dried moss is dipt in water, it very soon resumes the freshness and appearance of life. The internal structure of mosses is entirely cellular. Mosses are found in cool, airy, and moist situations, in woods, upon the trunks of trees, on old walls, the roofs of houses, &c. Some of them are entirely aquatic. About 800 species are known.

MOS'CHUS, in zoology, a genus of animals, class *Mammalia*, order *Pecora*. [See MUSK.]

MOTACIL'LA, in ornithology, a numerous genus of birds, of the order *Passeres*, distinguished by a straight beak of a subulated figure, and a lacerated tongue. To this genus belong the common wagtail, the wheat-ear, nightingale, red-start, wren, &c.

MOTET (from the French), a musical composition; some sacred subject, such as a hymn, psalm, or a small portion of Scripture. Some are set for several voices, and others are accompanied by instrumental music.

MOTH, in entomology, an insect classed by Linnæus in the genus *Phalæna*, which breeds in woollen, yarn and fur; and in its caterpillar state doing great injury by eating the substance, and destroying the texture of our garments, &c.

MOTH'ER, the female parent, to whose care, tenderness, and personal sacrifices, children are indebted for their existence through the helpless state of infancy, and for all their early education and welfare; and to whom, as their devoted friend, they ought always to display unabated affection, gratitude, and sympathy.——*Mother* is also used figuratively, to denote whatever gives origin to other things of the same kind: thus we say a *mother-church*, a *mother-tongue*, &c. ——A thick slimy substance concreted in liquors, particularly in vinegar, very different from scum or common lees.——*Mother-water*, a fluid remaining after the evaporation of salt water, and containing deliquescent salts and impurities.

MOTHER OF PEARL, a beautiful white enamel, or animal gluten, which, with alternate strata of carbonate of lime, forms the shell of the pearl fish.

MOTION, the continued and successive change of place. There are three general laws of motion. 1. That a body always perseveres in its state of rest, or of uniform motion in a right line, till by some external force it be made to change its state: for as a body is passive in receiving its motion, and the direction of its motion, so it retains them, or perseveres in them without any change, till it be acted on by something external. 2. That the change of motion is proportional to the force impressed, and is produced in the right line in which that force acts. 3. That action and re-action are equal with opposite directions, and are always to be estimated in the same right line.—All motion is in itself absolute, or the change of absolute space; but, when the motions of bodies are considered and compared with each other, then are they relative and apparent only: they are relative, as they are compared to each other, and they are apparent only, inasmuch that not their true or absolute motion, but the sum or difference of the motions only is perceivable to us. Motion, once begun, would be continued for ever, were it to meet with no interruption from external causes, such as the power of gravity, the resistance of the medium, &c.——*Equable motion* is generated by a single impetus or stroke; thus the motion of a ball from a cannon is produced by the single action of the powder in the first moment, and, therefore, the velocity it first sets out with would always continue the same were it void of gravity, and to move in an unresisting medium, which, therefore, would be always equable, or such as would carry it through the same length of space in every equal part of time.——*Accelerated motion* is produced by a constant impulse of power which keeps continually acting upon the body, as that of gravity which produces the motion of falling bodies, which sort of motion is constantly accelerated, because gravity every moment adds a new impulse which generates a new degree of velocity; and, the velocity thus increasing, the motion must be quickened each moment, or fall faster and faster the lower it falls. In like manner a body thrown perpendicularly upward, as a ball from a cannon, will have its motion continually retarded, because gravity acts constantly upon it in a direction contrary to that given it by the powder, so that its velocity upwards must be continually diminished, and its motion as continually retarded, till at last it be all destroyed. The body has then attained its utmost height, and is for a moment motionless, after which it begins to descend with a velocity in the same manner accelerated, till it comes to the earth's surface.——*Perpetual motion* is that which is effected or supplied by itself, without the impulse or intervention of any external cause. Hitherto it has been found impossible to invent a machine that has this principle.——Many interesting illustrations of motion, variously applied, will naturally suggest themselves to the reader. With regard to the *transference of motion* from one body to another, the action of the billiard ball affords a ready and well-known example: we see the ball that has been struck by the player, on its striking another ball suddenly stop, and the second ball proceeds with the same degree of velocity which the first had; the action which imparts the new motion being equal to the reaction which destroys the old. Although the transference of motion, in such a case, seems to be instantaneous, the change is



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really progressive, and is as follows: The approaching ball, at a certain point of time, has just given half of its motion to the other equal ball; and if both were of soft clay, they would then proceed together with half the original velocity; but, as they are elastic, the touching parts at the moment supposed, are compressed like a spring between the balls; and by their expanding, and exerting force equally both ways, they double the velocity of the foremost ball, and destroy altogether the motion in the other.—The following appears more extraordinary; but it is not the less true:—A cannon or musket ball, shot quite horizontally, will touch the ground of a level plane just as soon as another ball dropped at the same instant directly from the cannon's mouth. The simple fact is, that the forward or projectile motion does not at all interfere with the action of gravity. This fact, which most persons, before consideration, would be disposed to doubt, makes strikingly sensible the extraordinary speed of a cannon ball; *viz.* which has already carried it 600 or 800 feet before touching, during the half second that a ball dropped from the hand of a standing person requires to reach the earth. This fact also explains why, for a long range, the gun must always be pointed more or less upwards.—*Dr. Arnott's Elements of Physic.*

MOTION, in law, an application in court, either by the parties themselves or their counsel, in order to obtain some order or rule of court.—In parliament or any other public assembly, the proposing of any matter for the consideration of those present; as, "the honourable member made a motion to the following effect," &c.

MOTIVE POWER, in mechanics, the whole power or force acting upon any body, or quantity of matter, by which it is put in motion.

MOTMOT, in ornithology, a beautiful South American bird, about the size of a jay, with a long tail, the two middle feathers of which are destitute of vanes for about an inch, at a small distance from the extremity. They are very shy and timid, and if taken when old, invariably refuse all kinds of food. Their usual places of resort are the depths of large forests, and they build their nests in the ground. The principal species are the blue-headed motmot *(prionites momota)* and the red-headed *(p. dombey)*.

MOTTO, a sentence or phrase prefixed to an essay or discourse, containing something analogous to the subject of it.——In heraldry, a word or short sentence put to an emblem or device, or to a coat of arms in a scroll at the bottom of the escutcheon.

MOULDINGS, in architecture, certain projections beyond the bare wall, column, &c., an assemblage of which forms a cornice, or other decoration.

MOUND, in fortification, any thing raised, as a bank of earth, &c. to fortify or defend a place.——*Mound*, in heraldry, a ball or globe with a cross upon it, such as our monarchs are usually drawn with, holding it in the left hand, as they do the sceptre in the right.

MOULINE, in mechanics, a roller which, being crossed with two levers, is usually applied to cranes, capstans, &c. for the purpose of heaving stones, &c.

MOUNT, an eminence or elevation of earth, indefinite in height or size, and may be a hill, a hillock, or a mountain. It is applied in Scripture to the small hillocks on which sacrifice was offered, as well as to Mount Sinai, the Mount of Olives, &c.

MOUNTAIN ASH, an ornamental tree, which in its leaf resembles the common ash, but it bears a clustered flower, the odour of which is powerful, and which is succeeded by beautiful red berries.

MOUNTAINS, the largest elevations or eminences on the surface of the globe, consisting of a mass of earth and rock, but of no definite altitude. They are composed of primitive rocks, as granite, trap, and porphyry, other rocks and earth being subsequent formations. The principal ridges are the Andes, in South America, from three to five miles high; the Himalayas, in North Hindostan, of equal height; the Alps, in Switzerland; the mountains of Caucasus and Thibet, in Asia; the Mountains of the Moon (as they are oddly named), in Africa; those of Norway; the Pyrenees, in Spain; the Welsh and Scotch mountains, &c. In North and South America one unbroken chain of mountains runs in a northerly and southerly direction for 8000 miles near the western side of that vast continent, and, with some minor divisions, has evidently determined the general outline of both countries. The action of air, water, and volcanic fires, waste and level these ridges; and, under different circumstances, their debris, or ruins, form, by successive operations, all varieties of earths and soils. Countries covered with high mountains present, in the summer, different climates at different elevations, within a very narrow compass. We may ascend gradually from flourishing and delightful valleys, decorated with corn, fruit-trees, and vines, to pastures covered with odoriferous Alpine plants, and perceive the vegetation diminishing and dwindling as we advance, till, at last, organic life ceases, and the cold prevents all further progress.——We may here observe, that inequalities of surface appertain to other planetary bodies, as appears by viewing the Moon and Venus through a telescope.

MOUNTING, in the mechanic arts, is any thing that serves to raise or set off a work; thus, the frame and its ornaments make the mounting of a looking-glass; the hilt, the mounting of a sword, &c.——*Mounting*, in military affairs, signifies going upon duty: thus, *mounting a breach*, is running up to it; and *mounting guard*, is going upon guard; but *mounting a cannon, mortar*, &c. is the setting it properly on its carriage.

MOURNING, the dress or customary habit worn by bereaved survivors. The colours of the dress or habit worn as





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badges of grief are different in different countries. In Europe, the ordinary colour for mourning is black; in China it is white, a colour used for mourning by the ancient Spartan and Roman ladies; in Turkey it is blue or violet; in Egypt, yellow; in Ethiopia, brown; and kings and cardinals mourn in purple. Some have attempted to trace the associations by which the colours acquired their character, to natural causes. Thus black, which is the privation of light, is supposed to denote the privation of life; white is an emblem of purity; yellow is the colour of leaves when they fall, and represents that death is the end of all human hopes; brown denotes the earth, to which the dead return; blue is an emblem of the happiness which it is hoped the deceased enjoys; and purple, or violet, is supposed to express a mixture of sorrow and hope. Among the ancients, as among the moderns, public mournings were common on the death of a distinguished public benefactor; and with the Greeks and Romans, it was the custom, during the term prescribed for mourning, to lay aside all ornaments of dress, to abstain from the bath, and other indulgences.

MOUSE, in zoology, a small animal of the genus *Mus*, that haunts houses and fields. It is nearly allied to the rat, and is classed with it in the Linnæan system. Field mice are frequently white.

MOU'SE-EAR, in botany, a plant of the genus *Cerastium*, very similar to chickweed, but the flower is larger, and the fruit shaped like an ox's horn, open at the top.

MOUTH, in anatomy, a cavity or aperture in the head of any animal, at which the food is received, the voice uttered, and the inspiration and expiration of the air is performed. In a more general sense, the mouth consists of the lips, the gums, the insides of the cheeks, the palate, the salival glands, the uvula, and tonsils.——Also the aperture of many other things, so called from the similarity of situation or use; as the mouth of a cannon, where the powder and ball go in and out; the mouth of a river, where the water passes in and out; the mouth of a vessel, &c.

MO'VEMENT, in military affairs, the regular orderly motion of an army for some particular purpose.——In music, the progress of sounds from grave to acute, or from acute to grave.

MU'CIC ACID, in chemistry, an acid generally known by the name of *saccholactic acid*, because it was obtained from sugar or milk; but all the gums appear equally to afford it.

MU'CILAGE, in chemistry, a viscous substance of sufficient consistence to hold together; as a solution of gum or any tenacious liquid, or a lubricous extraction from the roots and other parts of vegetables.——*Mucilaginous glands*, in anatomy, glandules or kernels about the joints, that separate the slimy matter necessary for their lubrication.

MU'CRO CORDIS, in anatomy, the lower pointed end of the heart.

MU'CRONATE, in botany, an epithet for a sharp-pointed leaf terminating like a dagger.

MU'CUS, a viscid fluid in the animal body, secreted by the mucous membrane, which it serves to moisten and defend. It covers the lining membranes of all the cavities which open externally, such as those of the mouth, nose, lungs, intestinal canal, urinary passages, &c. It is transparent, glutinous, thready, and of a salt flavour, perfectly distinct from gelatine and vegetable mucus.——*Mucous fever*, a term frequently used by medical writers, to express those fevers, in which nature is endeavouring to rid herself of an abundance of pituitous, mucous, and serous matter.

MUEZ'ZIN, or MUEI'DIN, among the Mahometans, the crier who announces the hours of prayer from the minaret, and reminds the faithful of their duty.

MUFTI, the chief priest among the Mussulmen, appointed by the grand seignior himself. He is the oracle in all doubtful questions of their law.

MUGGLETONIANS, a religious sect which arose in England, about the year 1657; so denominated from their leader Ludowic Muggleton, a tailor, who with his associate Reeves, asserted that they were the two last witnesses of God mentioned in the Revelations.

MULATTO, the offspring of a black man and white woman, and *vice versâ*. The mulatto is of a deep tawny or yellow colour, with frizzled or woolly hair, and resembles the European more than the African. The descendants of Europeans and Indians are called *mestivos*.

MUL'BERRY, the fruit of a large spreading tree, resembling the raspberry in its seedy make, but is much larger. The white mulberry (*morus alba*) is cultivated in France and Italy for its leaves to feed silkworms, but the Persians make use of the common black mulberry (*morus nigra*) for this purpose. The red mulberry (*morus rubra*) is one of the most valuable of American trees, from the properties of the wood. It grows to the height of 60 feet and upwards, with a trunk six feet in circumference. The wood is fine-grained, compact, strong, and solid; and is used for knees, floor-timbers, &c. in ships, as well as for many other purposes where strength and durability are necessary.

MULCH, a term used by gardeners for rotten dung, or the like, thrown upon beds of young plants, to preserve them from the bad effects of cold or drought.

MULE, in zoology, a mongrel kind of quadruped, usually generated between an ass and a mare, and sometimes between a horse and a she-ass; but the latter is every way inferior to the former. They are hardy, sure-footed animals; and in the mountainous parts of Spain and Italy, they are far more useful than horses, being capable of carrying equally heavy burdens, and enduring long-continued fatigue. Mules have been much employed, both in ancient and modern times. The Roman ladies had equi-



ROUNDED PEBBLES ARE BROKEN FRAGMENTS OF ROCKS, RENDERED SMOOTH BY THE ACTION OF WATER AND MUTUAL ATTRITION.

A SPECIES OF THE MULBERRY-TREE IS CULTIVATED IN JAPAN FOR THE MANUFACTURE OF PAPER, AND IS CALLED THE PAPER MULBERRY.

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pages drawn by mules; and at this day, in Spain, the coaches of the nobility are usually drawn by them.——*Mule*, in manufactures, the name given to a machine, invented by Crompton, in 1779, for producing finer yarn than was spun by the machines previously in use. At present, the *mule* is employed in the fabrication of the most delicate articles; in short, threads have been produced of such fineness, that a pound of cotton has been calculated to reach 167 miles.

MU'LIER, in law, a married woman, in distinction from a concubine. Also, a name for lawful issue born in wedlock, who are preferred before an elder brother of illegitimate birth.

MUL'LET (*mullus*), in ichthyology, a genus of fishes, distinguished by the oblique form of their head, two long appendages under the chin, and large scales on the head and body, which are very easily detached. The most celebrated species is the *mullus barbatus*, found in the Mediterranean, which were held in such estimation by Roman epicures, that they were sometimes sold for their weight in silver. At present they are but little esteemed. The roes are known in Italy under the name of *botargo*.——In heraldry, the *mullet* is a star-shaped ornament, and is added to the family arms by the third of the junior branches of a family, as a mark of their cadency.

MUL'LER, a stone held in the hand, with which colours and other matters are ground on another stone; used by painters and apothecaries.

MULTICAP'SULAR, in botany, having many capsules.

MULTIFLOROUS, in botany, having many flowers.

MULTILATERAL, in geometry, is a term applied to those figures which have more than four sides or angles polygonal.

MULTILOC'ULAR, in botany, having many cells; as, a multilocular pericarp.

MULTISIL'IQUOUS, in botany, having many pods or seed-vessels.

MULTINO'MIAL, in mathematics, a term applied to such roots as are composed of many names, parts, or members.

MULTIPLE, in arithmetic, a number which comprehends some other several times; thus 6 is a multiple of 2, and 12 is a multiple of 6, 4, and 3, comprehending the first twice, the second thrice, &c.——*Multiple Ratio*, or *Proportion*, is that which is between multiples. If the lesser term of the ratio be an aliquot part of the greater, the ratio of the greater to the less is called multiple; and that of the less to the greater submultiple.

MULTIPLICA'TION, an arithmetical operation by which the multiplicand is accumulated as many times as there are units in the multiplier: thus 10 multiplied by 5 is increased to 50. The number multiplying is the *multiplier*; the number multiplied, the *multiplicand*; and the result of the operation is the *product*.——*Cross multiplication*, otherwise called duodecimal arithmetic, is an expeditious method of multiplying things of several species, or denominations, by others likewise of different species, &c.

MULTIPLYING GLASS, in optics, a glass with several plane sides, each of which presents a separate picture of an object. This is caused by the rays of light, which issue from the same point, undergoing different refractions, so as to enter the eye from every surface in a different direction.

MULTISILI'QUÆ, the 26th Linnæan natural order of plants, with many seed-vessels, as columbines, &c.

MULTIVALVES, in natural history, the name of a general class of shell-fish, distinguished from the univalves and bivalves, by their consisting of three or more shells.

MUL'TURE, in Scots law, the toll or emolument given to the proprietor of a mill for grinding corn.

MUM, a malt liquor much used in Germany. It is made of the malt of wheat, with a small proportion of oat-meal and ground beans.

MU'MIA, in mineralogy, a sort of bitumen, or mineral pitch, which is soft and tough, like shoemaker's wax, when the weather is warm, but brittle, like pitch, in cold weather. It is found in Persia, where it is highly valued.

MUM'MY, a dead body preserved by antiseptics, according to methods practised by the Egyptians. The processes for the preservation of the body were very various. Some of the mummies which have been opened have been dried by vegetable and balsamic substances, others by salt or natron. In the former case, aromatic gums or asphaltum were used; and such were generally in good preservation. Those dried with saline substances are of a black, hard, smooth appearance: on exposure to the air they attract moisture, and become covered with a saline substance. The coffin is usually of sycamore, cedar, or pasteboard; the case is entire, and covered, within and without, by paintings representing funeral scenes, and a great variety of other subjects: the cover, which is also entire, is ornamented in the same manner, and contains, too, the countenance of the deceased in relief, painted, and often gilded. But we are not to imagine that Egypt was the only country in which the preservation of the bodies of the dead was attended to. In every country the custom of embalming has been occasionally practised: and we have recently read, that a million of mummies have lately been discovered in the environs of Durango, in Mexico! They are in a sitting posture, but have the same wrappings, bands, and ornaments as the Egyptians——For the information of all who are interested in these matters, we quote the following *recipe* from the *Literary Gazette*, June 20, 1840.—"M. Gaunal's mixture for injecting the carotid artery, whereby all the purposes of embalming are attained:—One kilogramme of dry sulphate of alumine, dissolved in half a litre of warm water, and marking thirty-two degrees of the areometer. About

THE TERM "MULE" IS APPLIED, IN ZOOLOGY, TO EVERY KIND OF ANIMAL PRODUCED BY A MIXTURE OF TWO DIFFERENT SPECIES.

SOME OF THE SEPULCHRAL CHAMBERS IN EGYPT ARE COVERED WITH FRESCO PAINTINGS, AND FREQUENTLY CONTAIN STATUES, VASES, &C.



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three or four litres of this will inject all the vessels of the body, and will preserve it in summer;—in the winter, from one to three litres are enough. But, to keep away insects, there ought to be added to the above chlorure of copper, at the rate of 100 grammes to a kilogramme of the sulphate of alumine, or else fifty grammes of arsenic acid. This applies to all kinds of animals, birds, fishes, &c., as well as to the human subject."——In the British Museum, considerable space is allotted to the reception of Egyptian mummies, of which there are at present many more specimens than, in our humble opinion, can possibly be interesting to the antiquarian, or required even for the gratification of those who delight to ponder over the embalmed relics of their species. To us, indeed, such mortuary curiosities present a ghastly and indecent spectacle; and we never see them without wishing that their places were occupied with something more instructive and less revolting to the feelings.

**MUMPS**, the common name of the disease called by medical practitioners *cynanche parotidea*, or a swelling of the parotid glands. It seems, sometimes, to be the effect of cold, and children are more subject to it than adults. It is often epidemic, and by some is thought contagious.

**MUN'DIC**, in mineralogy, a sort of copper ore, otherwise called copper pyrites, or sulphuret of copper, the most common ore in the mines of Cornwall. It is of a greenish yellow colour.

**MUNI'CIPAL**, in the Roman civil law, an epithet which signifies, invested with the rights and privileges of Roman citizens. Thus the municipal cities were those whose inhabitants were capable of enjoying civil offices in the city of Rome; though the greater part of them had no suffrages or votes there.——In modern times, *Municipal law* pertains solely to the citizens and inhabitants of a state, and is thus distinguished from *political* law, *commercial* law, and the *law of nations*. And those are called *municipal officers* who are elected to defend the interest of cities, to maintain their rights and privileges, and to preserve order and harmony among the citizens; such as mayors, sheriffs, &c.

**MUN'JEET**, a species of madder, produced in various parts of India. The roots are long and slender, and when broken appear of a red colour. It is used in dyeing, the red which it produces being, though somewhat peculiar, nearly the same as that produced by European madder.

**MU'NIMENTS**, in law, the writings relating to a person's inheritance, by which he is enabled to defend his title to his estate: or, in a more general sense, all manner of evidences, such as charters, feoffments, releases, &c.——*Muniment house*, a little strong room in a cathedral, college, or university, destined for keeping the seal, charters, &c. of such cathedral, college, &c.

**MUNI'TION**, the provisions with which a place is furnished in order for defence; or that which follows a camp for its subsistence.——*Munition ships*, are those that have naval or military stores on board, and attend or follow a fleet to supply ships of war.

**MU'RAL ARCH**, an arched wall placed exactly in the plane of the meridian, for fixing a large quadrant, sextant, or other instrument, to observe the meridian altitude, &c. of the heavenly bodies.

**MURA'LIS CORO'NA**, or **MU'RAL CROWN**, (from *murus*, a wall) among the ancient Romans, a golden crown or circle of gold, indented and embattled, bestowed on him who first mounted the wall of a besieged place and there planted a standard.

**MURDER**, in law, the wilful and felonious killing a person from premeditated malice; provided the party wounded or otherwise hurt, die within a year and a day after the fact be committed. To constitute murder in law, the person killing another must be of sound mind or in possession of his reason, and the act must be done with malice prepense and aforethought; but malice may be implied, as well as expressed.

**MU'REX**, in ichthyology, a shell-fish noted among the ancients for its purple dye. The murex was said to discharge from its mouth the purple liquor of which the dye was made; on which account the fishermen were careful to catch it alive. In the Linnæn system it is a genus of insects under the class *Vermes*, the animal of which is a *limax*: the shell is univalve and spiral.

**MU'RIATES**, in chemistry, a genus of salts formed of the muriatic acid with certain bases: the most important of these is the muriate of soda or common salt. It exists abundantly in nature, immense quantities of it being dug out of the earth, which requires only to be reduced to powder. In this state it is called rock salt. It is also one of the constituents of sea-water, and is obtained from it by evaporation.

**MURIAT'IC ACID**, in chemistry (called also *spirit of salt*, and, by the French, *hydro-chloric acid*, in allusion to its composition), is an acid procured from salt, consisting of hydrogen combined with chlorine gas. Its odour is pungent, and its taste acid and corrosive. If an inflamed taper be immersed in it, it is instantly extinguished: it is also destructive of animal life. It combines, like the other powerful acids, with the alkalies, earths, and metallic oxydes, forming a very peculiar class of salts. In the *materia medica*, this acid is a valuable article: it is particularly used in cases of dyspepsia that are attended with morbid secretions; also in hepatic derangements and cutaneous diseases; and as a disinfecting agent it is found highly serviceable.

**MU'RICATED**, in botany, having the surface covered with sharp points, or armed with prickles.

**MU'RICITE**, fossil remains of the *murex*, a genus of shells.

**MUR'RAIN**, a contagious disorder among cattle, principally caused by a hot, dry season, or general putrefaction of the air, which begets an inflammation of the blood and a swelling in the throat that soon prove mortal.

THE COLOUR WHICH MUMJET IMPARTS TO COTTON AND LINEN IS LESS DURABLE THAN THAT OF MADDER, BUT BRIGHTER ON WOOLLEN.

MURIATE OF COBALT MAKES SYMPATHETIC INK, BEING COLOURLESS WHEN COLD, BUT TURNING GREEN WHEN HELD TO THE FIRE.



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SOME ANIMALS ARE REMARKABLE FOR THE EXTRAORDINARY DENSITY OF THEIR MUSCLES: THE LION IS A STRIKING INSTANCE OF THIS.

**MURR'HINE VA'SES**, splendid antique vessels, made of a delicate kind of porcelain (or, as some say, of a mineral of the class of sardonyx or agate), and equally distinguished for the beauty of their execution as for the costliness of the material. They were brought, by Pompey, from Asia to Rome, after his victory over Mithridates, and bore an immense price.

**MUS**, in zoology, a generic term, in the Linnæan system, for a tribe of animals of the class *Mammalia*, and order *Glires*, distinguished principally by their teeth. The most remarkable species are the rat and mouse, the musk rat, and the lemming.

**MUS'CA**, in entomology, the Fly, a genus of insects of the *dipterous* order.——*Musca Indica*, in astronomy, the Fly, a southern constellation.

**MUS'CADINE, MUS'CADEL, MUS'CATEL**, or **MUS'CAT** (for by each of these names is it known), a rich kind of wine, the growth of Italy and the south of France.

**MUSCÆ VOLITANTES**, certain dark spots, which seem to flit before the eyes of many people on looking at the sky, a candle, or other bright object; and so called from their resembling flies.

**MUS'CLE**, in anatomy, a part of an animal body, destined to move some other part. The muscles consist of a number of thin parallel plates, divided into a great number of *fasciculi* or little bundles of fibres, so constructed as to admit of relaxation and contraction, and serving as the organ of motion. Each muscle is surrounded by a thin and delicate covering of cellular membrane, which, dipping down into its substance, encloses the most minute fibres we are able to trace, connecting them to each other, lubricating them by means of the fat which its cells contain, and serving as a support to the blood-vessels, lymphatics, and nerves, which are distributed through the muscles.——*Muscular motion* is of three kinds, voluntary, involuntary, and mixed. The *voluntary motions* of muscles proceed from an exertion of the will: thus the mind directs the arm to be raised or depressed, the knee to be bent, the tongue to move, &c. The *involuntary motions* of muscles are performed by organs, without any attention of the mind, as the contraction and dilatation of the heart, arteries, veins, absorbents, stomach, intestines, &c. The *mixed motions* are those which are in part under the control of the will, but which ordinarily act without our being conscious of their acting; and are perceived in the muscles of respiration, the intercostals, the abdominal muscles, and the diaphragm. When a muscle acts, it becomes shorter and thicker; both its origin and insertion are drawn towards its middle. When a muscle is wounded, or otherwise irritated, it contracts independently of the will: this power is called *irritability*, and it is a property peculiar to, and inherent in the muscles. The intensity of muscular contraction, that is, the degree of power with which the fibres draw themselves together, is regulated by the action of the brain. The cerebral influence, and the disposition of the muscular tissue, are the two elements of the intensity of muscular contraction; but a very great cerebral energy is rarely found united, in the same individual, with that disposition of the muscular fibres which is necessary to produce intense contractions, but when they are united they produce astonishing effects. The extremities of the muscles are inserted into the bones.

**MUSCOVA'DO**, unrefined sugar, or the raw material from which loaf sugar is procured by refining. Muscovado is obtained from the juice of the sugar-cane by evaporation and draining off the liquid part called *molasses*.

**MU'SES**, in the poetry of the ancients, personifications of the various branches of delightful exercise in which human genius displays itself. They were beautifully said to be the daughters of Jove and Mnemosyné, or Memory; and they were represented as companions of Apollo upon Parnassus. As the subject was wholly dependent upon the fancy of the poet, it was not always treated of alike. Thus according to some, all the functions of the Muses were united in three persons; Mnemé, Aœde, and Meleté; that is, Memory, Song, and Meditation; but it was more usual to reckon nine, and to name them as follows: Clio, to whom they attributed the invention of history; Melpomene, the inventor of tragedy; Thalia, of comedy; Euterpe, of the use of the flute; Terpsichore, of the harp; Erato, of the lyre and lute; Calliope, of heroic verse; Urania, of astrology; and Polyhymnia, of rhetoric.

**MUSE'UM**, a place set apart as a repository for curious, valuable, and interesting objects connected with the arts and sciences, more especially such as relate to natural history. The term was originally applied to a study or a place set apart for learned men in the royal palace of Alexandria, by Ptolemy Philadelphus, who founded a college, and gave salaries to the several members, adding also an extensive library, which was one of the most celebrated in the world.——The British Museum in London is a very extensive and magnificent building, and the noblest cabinet of curiosities in the world. This edifice was erected in 1677, and was called Montague-house, from having been the town residence of the dukes of Montague. In the year 1753, parliament having passed an act for purchasing the museum of Sir Hans Sloane, and the collection of manuscripts of lord Oxford, called the Harleian Library, for the use of the public; twenty-six trustees were appointed and incorporated to provide a repository for these and some other collections, which repository was to be called the British Museum. Since that time vast gifts and purchases have been made, in every department of science, literature, and art; great additions have consequently become necessary to the building, and the accommodation of the public has been studied in every possible way; so that for extent and usefulness it is altogether unrivalled.——There are other museums, well

BEFORE MUSEUMS WERE ESTABLISHED, A DELUGE OF BARBARISM HAD SWEPT AWAY THE FINEST WORKS OF ANCIENT ART.



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WHEN THE HORDES OF BARBARIANS BROKE IN UPON ANCIENT ROME, THE WORKS OF ART WERE INVOLVED IN INDISCRIMINATE DESTRUCTION.

deserving the name, in some of our chief provincial towns; and since the establishment of Literary and Scientific Institutions so generally throughout the country, great progress has been made towards their extension.

MUSH'ROOM (*fungus*), in botany, a genus of imperfect plants, composed of a pedicle, crowned with a broad head, convex and smooth at the top; and hollow, foliated, lamellated, or fistulous, on the under side. As many *fungi*, closely resembling mushrooms in appearance, are of a poisonous quality, the greatest caution should be used by those who provide them. The surest test is the palate: for when a fungus has a pleasant flavour it is wholesome; if, on the contrary, it have an offensive smell, a bitter, astringent, or styptic tase, or is even of unpleasant flavour, it is unfit for food. Colour, figure, and texture cannot be relied on; yet the pure yellow, gold colour, bluish pale, dark or lustre brown, wine red, or the violet, belong to many that are eatable; while the pale or sulphur yellow, bright or blood red, and the greenish, are generally poisonous. The safe kinds have mostly a compact, brittle texture; the flesh is white; and they grow more readily in open places than in damp or wood-shaded spots.

MU'SIC, is the science of sounds, considered as capable of producing melody, and agreeably affecting the mind by a due disposition, combination, and proportion. It treats of the number, time, division, succession, and combination of sounds. It is divided into *theoretical* music, which inquires into the properties of concords and discords, and explains their combinations and proportions for the production of melody and harmony; and *practical* music, which is the art of applying the theory of music in the composition of all sorts of tunes and airs. Music is also either vocal or instrumental. *Vocal* music is the melody of a single voice, or the harmony of two or more voices in concert; *instrumental* music is that produced by one or more instruments. Every musical production ought to be expressive of feelings, and, through them, of ideas; but though music of some kind exists wherever the human species is found, it does not follow that every good piece of music must please all men alike, or be understood by all alike, because music is an art requiring cultivation of the mind and heart, to appreciate it fully. As civilization advances, music, as a science, gains new advocates; and the day is evidently fast approaching when few will decry music on the ground that its effects are merely sensual. It is addressed to the ear, indeed; but all the influences which we receive from without are conveyed through the medium of the senses; and the tones of music often speak a language to the soul richer in meaning than words could express. Nothing is merely sensual which makes a lasting spiritual impression upon us; and those who deny to music such a power, have not heard its sublimest strains, or have not the capacity to appreciate them.

—With regard to the antiquity of music, it appears to have been almost coeval with man. Moses tells us that Jubal, who lived before the flood, was the inventor of the kinnor and the hugah, *i. e.* the harp and the organ. The Jews were fond of music in their religious ceremonies, their feasts, their public rejoicings, their marriages, and their mournings. The music of the temple was performed by the families of Asaph, Heman, and Jeduthun the Levites, whose whole business was to learn and practise this agreeable art; and abundant provision was made for them, that they might not be prevented from pursuing their musical studies by the cares of life. Kings and great men among the Jews studied music, and David made a very great proficiency in it. In their time, indeed, music had reached its highest perfection among the Hebrew nation, and part of their religious service consisted in chanting solemn psalms, with instrumental accompaniments.—The invention of the lyre is ascribed to Hermes Trismegistus, the Mercury of the Egyptians, which is a proof of its antiquity; but a still greater proof of the existence of musical instruments amongst them at a very early period, is drawn from the figure of an instrument said to be represented on an obeliak, erected, as is supposed, by Sesostris at Heliopolis. The Greeks, we know, were exceedingly fond of music. It had a considerable share in their education; and so great was its influence over their bodies as well as their minds, that it was thought to be a remedy for many disorders.

MUSK, a dry, light, and friable substance, of a dusky black colour, tinged with purple; it is of a very strong scent, and only agreeable when in small quantity, or moderated by the mixture of some other perfume. It is partially soluble in water, which receives its smell, and also in alcohol, to which, however, it does not communicate its odour. It is imported into England from China; but an inferior kind is brought from Bengal, and a still baser sort from Russia. From its being a very high-priced article, it is often adulterated.—The *Moschus Moschiferus*, or Thibet musk, from which the perfume is obtained, is a quadruped, in size and figure resembling a small roebuck. The hair of the body is long, and stands erect; the tail short; the ears long and narrow; black hoofs; and tusks, nearly two inches long, which project considerably. The male is furnished with a small bag, about the size of a hen's egg, hanging from the abdomen, in which is contained the musk. As this animal is naturally timid, it lives on the cliffs and summits of lofty mountains; and in running, leaping, and climbing, it displays astonishing agility.

MUSKETOON', a short thick musket, carrying five ounces of iron, or seven and a half of lead, with an equal quantity of powder.

MUSK'-MELON, a delicious kind of melon, named probably from its fragrance.

MUSK'-OX, in zoology, a species of the

WHEN MUSK IS THOROUGHLY DRIED IT BECOMES NEARLY ODORLESS; BUT IS RESTORED BY BEING MOISTENED WITH WATER OF AMMONIA.



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MUSLINS AND COTTONS ARE THROWN INTO PUMP-WATER AFTER BEING WASHED IN SOAP, TO GIVE THEM A PECULIAR FIRMNESS.

MUSTARD WAS FORMERLY EXTENSIVELY CULTIVATED IN DURHAM, BUT IT IS NOW CHIEFLY GROWN IN THE NORTH RIDING OF YORKSHIRE.

genus *Roe*, which inhabits the most barren parts of North America. The musk ox is considerably smaller than the common ox. Their horns are very broad at the base, covering the forehead and crown of the head, but curving downwards between the eye and ear, until about the level of the mouth, when they turn upwards. The colour of the hair is generally brown: on the neck and between the shoulders it is long, matted, and somewhat curled, causing the animal to appear humped: on the shoulders, sides, and thighs, it is so long as to hang down below the middle of the leg. The legs are short and thick, and furnished with narrow hoofs.

MUSK'-RAT, an animal of the beaver kind, which yields an oily fluid, having the perfume of musk. The colour of its body is a reddish-brown, the belly and breast of an ash colour. The hair is soft and glossy, and beneath it is a thick coat, which is much used in the manufacture of hats. The flesh is not eatable, from the strong odour of musk that pervades it. Musk-rats are very common in North America. They dwell on the banks of small rivers; and where the banks are high they form large and extensive burrows, which have entrances below the surface of the water, and gradually ascend till they terminate in a chamber above the level of high water. When, however, these animals inhabit low and marshy situations, they construct houses not very unlike those of the beaver, composed of reeds, &c. mixed with clay. They swim remarkably well, and are capable of remaining under water for a considerable time. The popular name of the musk-rat in America is *musquash*.

MUSK'-ROSE, a sort of rose from which a highly odorous oil is extracted at Tunis.

MUS'LIN, a fine sort of cotton-cloth, which bears a downy knap on its surface. This knap the French call *mousse*, as resembling moss; whence the name *muslin*. Muslins are made in the greatest perfection in Asia; but the nations of Europe imitate the manufacture with great success. The extreme lightness of the finer performances of the East is admirable.

MUS'NUD, the name of a royal throne in eastern countries.

MUSQUI'TO, a kind of gnat that abounds in marshes and low lands, in hot countries; whose sting is peculiarly painful and vexatious.

MUS'SEL, or MUS'CLE, a fish inhabiting a bivalvular shell, from which, in some seas, pearls are often obtained. It is found in large beds, adhering to other bodies by a long silky beard.

MUS'SULMAN, or MOS'LEM, a follower of Mahomet. This word signifies, in the Turkish language, a true believer.

MUST, the juice of the grape, which by fermentation is converted into wine.

MUSTA'CHES (French, *moustache*; Italian, *mostaccio*); the hair left growing on the upper lip.

MUSTARD, in botany, a plant of the genus *Sinapis*, which is very commonly cultivated for the sake of its seeds, which when powdered and mixed with vinegar or water, form a well-known pungent condiment in daily use. It is a powerful stimulant, for which it is often taken internally, and used externally in cataplasms.

MUSTE'LA, in zoology, a genus of animals, class *Mammalia*, order *Fera*; comprehending the otter, badger, martin, sable, polecat, ferret, ermine, and some species of the weasel.

MUSTELINE, an epithet for whatever pertains to the weasel, or animals of the genus *Mustela*.

MUSTER-ROLL, in a military sense, a list of the officers and men in every regiment, which is delivered to the muster-master, inspecting field-officer, or whoever is appointed to inspect the same.

MUTE, in law, a person that stands speechless when he ought to answer or plead.——In grammar, a letter that represents no sound. Mutes are of two kinds: the *pure mutes* which entirely intercept the voice, as *k*, *p*, and *t*, in the syllables, *ek*, *ep*, *et*; and the *impure mutes*, which intercept the voice less suddenly, as *b*, *d*, and *g*, in the syllables *eb*, *ed*, *eg*.——*Mute*, in mineralogy, an epithet for minerals which do not ring when they are struck.

MUTES, in the Grand Seignior's seraglio, dumb officers who are sent to strangle, with the bow-string, bashaws or other persons who fall under the sultan's displeasure.——*Mutes*, among undertakers, men who are employed to stand at the door of the deceased, until the body is carried out.

MU'TINY, an insurrection of soldiers or seamen, or open resistance to the authority of their commanders. Any attempt to excite opposition to lawful authority, or any act of contempt towards officers, or disobedience of commands, is by the British mutiny act declared to be mutiny, and is punishable by the sentence of a court-martial.

MYOGRAPHY, or MYOLOGY, that part of anatomy which treats of the muscles of the human body.

MYRIAD, the number of ten thousand; or, in poetical language, an innumerable multitude.

MYRIAM'ETER, in the new system of French measures, the length of ten thousand meters, equal to two of the former leagues.

MYRIARE, a French linear measure of ten thousand acres, or 100,000 square meters.

MYRICINE, in chemistry, the substance which remains after bees-wax has been digested in alcohol.

MYRIOLITER, a French measure of capacity, containing ten thousand liters, or 610,280 cubic inches.

MYRIORAMA, a movable picture, capable of forming an almost endless variety of picturesque scenes, by means of several fragments or sections of landscapes on cards, which may be placed together in numberless combinations.

MYRMELEON, a genus of insects in the Linnæan system, one species of which is remarkable on account of its larva, which



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has the property of preparing a sort of pitfall for the ensnaring of other insects.

MYROBALAN, a dried fruit of the plum kind, brought from the East Indies, and formerly used in medicine. The Hindoos use them both in medicine and in calico printing. They have an unpleasant bitter taste; produce, with iron, a durable black dye and ink; and with alum, a very full, though dark, brownish yellow.

MYRRH, a fragrant, bitter, aromatic gum-resin, issuing by incision, and sometimes spontaneously, from the trunk and larger branches of a tree growing in Egypt, Arabia, and Abyssinia. The tree which yields this substance is not exactly known, but, according to Bruce, it is a species of *mimosa*. It is light and brittle; does not melt when heated: burns with difficulty; and yields oil by distillation. It is very valuable in medicine. It was this gum, which the magi, who came from the East to worship our Saviour, made him an offering of, and it was this also which was mingled with the wine given him to drink at his passion. The gall mentioned on the same occasion by St. Matthew, is probably the same with myrrh; for any thing bitter was usually distinguished by the name of gall.

MYRTLE, in botany, a fragrant shrub, of the genus *Myrtus*, which, among the ancients, was sacred to Venus. The common myrtle is a native of Asia, Africa, and Europe; and has been celebrated from remote antiquity on account of its fragrance and the beauty of its evergreen foliage. Myrtle wreaths adorned the brows of bloodless victors, and were the symbol of authority for magistrates at Athens. The genus *myrtus*, in the Linnæan system, includes also among its species the pimento or all-spice tree. ——*Myrtle wax*, a concrete oil, or vegetable wax, the product of the class of plants *myrica*, more commonly known by the name of *candleberry myrtle*.

MYSTERIES, or MIRACLES, in the middle ages, were a favourite kind of dramatic spectacles or entertainments, represented at solemn festivals. They were in vogue previous to the "*moralities*" which we have before spoken of; and were called *mysteries* and *miracles*, because they taught the mysterious doctrines of Christianity, and represented the miracles attributed to the saints and martyrs. At first the ecclesiastics were both the authors of them and the performers.

MYSTERY, something secret or concealed, impossible or difficult to comprehend. All religions, true or false, have their mysteries. The pagan religion was remarkably full of them; and it is presumed that they were designed to interpret those mythological fables and religious rites, the true meaning of which it was thought expedient to conceal from the people. The Eleusinia, or sacred rites of Ceres, solemnized at Eleusis, were called, by way of eminence, *the mysteries*; and so superstitiously careful were they to conceal these sacred rites, that if any person divulged any part of them, he was thought to have called down some divine judgment on his head, and it was accounted unsafe to abide under the same roof with him: Horace, indeed, declares, that he would not put to sea in the same ship with one who revealed the mysteries of Ceres. Many of the pagan mysteries were doubtless mysteries of iniquity, and kept secret because the knowledge of them would have rendered their religion ridiculous and odious. Thus we find the sacred writings often speak of the infamous mysteries of the pagan deities, in which the most shameful crimes were committed under the specious veil of religion. The whole religion of the Egyptians was mysterious from the beginning to the end, and both their doctrines and worship wrapped up in symbols and hieroglyphics.——The religion of the *Jews* was likewise full of mysteries; their laws, nay, their whole constitution and nation, were mysterious; but the mysteries of the Old Testament were generally types or shadows of something in the New. The Christian religion has also its mysteries; but, in the scripture language, the word mystery is used with some latitude, and denotes whatever is not to be known without a divine revelation.

MYSTICS, a religious sect distinguished by their professing a pure, sublime, and perfect devotion, with an entire disinterested love of God, free from all selfish considerations, and by their aspiring to a state of passive contemplation.

MYTHOLOGY, the history of the fabulous gods and heroes of antiquity, with the explanations of the fables or allegories couched therein. According to the opinion of most writers, among whom is that profound thinker, Lord Bacon, a great deal of concealed instruction and allegory was originally intended in most part of the ancient mythology: he observes, that some fables discover a great and evident similitude, relation, and connection with the thing they signify, as well in the structure of the fable, as in the meaning of the names whereby the persons or actors are characterised. He also takes a more enlarged and higher view of the subject, and looks on them not as the product of the age, nor the invention of the poets, but as sacred relics, or, as he terms them, "gentle whispers, and the breath of better times, that from the tradition of more ancient nations, came at length into the flutes and trumpets of the Greeks." But whether mythological fables are to be considered as allegorical expositions of truth, or gross conceptions of divine things formed by the ignorant, or as founded on historical facts, which have been varied and exaggerated by tradition, embellished by poetry, and purposely altered by cunning, they still retain their interest for the historian, to whom it is equally important to study the wide aberrations of mankind in their search for truth, as their successful attempts to attain it.

ABYSSINIAN MYRRH COMES TO US THROUGH THE EAST INDIES, BUT THAT PRODUCED IN ARABIA IS BROUGHT BY THE WAY OF TURKEY.

AS SOON AS THE AUTHENTIC TRADITION CONCERNING THE CREATION WAS LOST, OR ADULTERATED, THE FABLES OF MYTHOLOGY BEGAN.



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# N.

N, the fourteenth letter and eleventh consonant of the English alphabet, is an imperfect mute or semi-vowel, because part of its articulation may be continued for any length of time; it is also a liquid, and a nasal letter, the sound being formed by forcing the voice strongly through the mouth and nostrils, which, at the same time, is intercepted by applying the tip of the tongue to the fore part of the palate, with the lips open. It has one sound only, and after m is silent, or nearly so, as in *hymn*, *condemn*. Among the ancients, N stood as a numeral for 900; and, with a dash over it, for 9000. N. or No. stands as an abbreviation for *numero*, number; also for north.

NA'BOB (a corruption of *nawab* or *nawaub*), an Indian word for a deputy; a title of dignity and power applied to those who act under the soubahs or viceroys. The term, however, has become proverbial, in England, to signify a person who has acquired great wealth in our Indian possessions, and lives in great splendour.

NAC'ARAT, a crape or fine linen fabric, dyed fugitively of a pale red colour, which ladies rub upon their countenance to give them a delicate roseate hue.

NAC'RE (from *nacar*, Spanish), a term denoting the peculiar lustre of mother-of-pearl.

NA'CRE, in conchology, a testaceous animal, the *Pinna* of Linnæus, which produces a strong byssus that is woven by the Italians into a sort of silk.

NA'CRITE, a rare mineral, consisting of scaly parts; glimmering, pearly, friable, and somewhat greasy; the colour a greenish white.

NA'DAB, the sovereign pontiff, or high-priest of the Persians, whose dignity and office are very similar to that of the mufti among the Turks.

NA'DIR, in astronomy, that point of the heavens which is diametrically opposite to the zenith; the point directly under the place where we stand. The zenith and nadir are the two poles of the horizon.

NA'HUM, or *the prophecy of Nahum*, a canonical book of the Old Testament. Nahum, the seventh of the twelve minor prophets, was a native of Elkoshai, a little village of Galilee. The subject of his prophecy is the destruction of Nineveh, which he describes in the most lively and pathetic manner; his style being bold and figurative.

NA'IADS, in mythology, water-nymphs, or deities that preside over brooks and fountains. They are represented as beautiful women, with their heads crowned with rushes, and reclining against an urn, from which water is flowing.

NAI'ANT, in heraldry, an epithet for fish that are borne across the escutcheon, as if swimming.

NAIL, a bony excrescence growing at the ends of the fingers and toes of men and animals. The several parts of nails have their respective names: the extremity is called the apex; the opposite end, the root or base; and the white part near the latter, somewhat resembling a half moon, *lunula*. The substance of the nail is that of the skin, hardened, but firmly connected with it: for this reason, it is extremely sensible at its root, where the substance is yet tender; but at the apex, where it is perfectly hardened, it is capable of being cut without pain.——*Nails*, in building, small spikes of iron or other metal, generally with a head, formed for driving into and fastening boards, &c. together. Of these there are numerous kinds; and of such importance is the manufacture become, that several patents have lately been taken out for improved nail-making machinery, as well as for nails made by hand labour. The consumption of nails is immense, as those who have witnessed this branch of the iron manufacture of Birmingham, Bilston, Wolverhampton, Dudley, &c. must be well aware.——*Nail*, a measure of length containing the sixteenth part of a yard.

NAIS'SANT, in heraldry, a term applied to any animal issuing out of the midst of some ordinary, and showing only his head, shoulders, fore feet and legs, with the tip of his tail.

NAIVETE' (*naiveté*, Fr.) naturalness; absence of artifice. The essential meaning of the word is a natural, unreserved expression of sentiments and thoughts, without regard to conventional rules, and without weighing the construction which may be put upon the language or conduct. When it is genuine, it implies a guileless simplicity of heart, unimpaired by the chilling experience of society; but when affected, it is pre-eminent hypocrisy: and a good judge of human nature will infallibly detect it.

NAME, a word whereby men have agreed to express some idea; or which serves to signify a thing or subject spoken of. Names are either proper or appellative. Proper names are those which represent some individual thing or person, so as to distinguish it from all other things of the same species; and are either called Christian, as that given us at baptism, or surnames; the first imposed for the distinction of persons, answering to the Roman *prænomen*; the second for the distinction of families, answering to the *nomen* of the Romans, and the *patronymicum* of the Greeks. The ancient Britons, says Camden, generally took their names from colours, because they painted themselves. When they were subdued by the Romans, they took Roman names; the Saxons introduced the German names; the Danes brought with them their names; and the Normans introduced theirs.



THERE IS A PRODIGIOUS CONSUMPTION OF NAILS IN THE UNITED STATES, AND THEY ARE ALL MADE BY MACHINERY.

"WHAT'S IN A NAME? THAT WHICH WE CALL A ROSE, BY ANY OTHER NAME WOULD SMELL AS SWEET."—SHAKSPEARE.

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DURING THE NINETEENTH CENTURY THE POPULATION OF ENGLAND AND WALES WAS DOUBLED, BUT THE INCREASE OF REAL WEALTH WAS MORE THAN DOUBLED.

GREAT AS OUR NATIONAL DEBT HAS BEEN, IT HAS NEVER PARALYZED BRITAIN'S PECUNIARY STRENGTH, OR EXHAUSTED THE SPRING OF HER CIVIL PROSPERITY.

**NANKEEN'**, or **NANKIN'**, a sort of cotton cloth, of a firm texture, which takes its name from *Nanking*, in China, where it was originally manufactured. It is now imitated in most other countries where cotton goods are woven; but none is equal to that made in the East, on account of the natural colour of the cotton (*gossypium religiosum*) being reddish, while we are compelled to use a dye to give it the proper hue.

**NAPH'THA**; or **ROCK OIL**, in mineralogy, one of the thinnest of the liquid bitumens issuing from the earth, of a light brown or yellowish colour, and found on the borders of springs on the shores of the Caspian Sea. It feels greasy, has a bituminous smell, takes fire on the approach of flame, and is so light as to float on the water. It rises in many parts of Asia, and oxygen explodes it by the mere heat of the sun.

**NAPH'THALINE**, a white crystalisable substance, which may be extracted by distillation from coal tar. It is a bicarburet of hydrogen, and has a strong aromatic smell.

**NA'PLES YEL'LOW**, a fine yellow pigment, employed not only in oil painting, but also for porcelain and enamel. It has a fresh, brilliant, rich hue. Of late years chromate of lead has very much superseded its use.

**NARCIS'SUS**, in botany, the Daffodil; a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The narcissus is cultivated in gardens on account of its sweet-smelling flowers, which are either yellow or white. They are of the bulbous rooted tribe, perennial in root, but with annual leaves and flower-stalks. The corolla is double, the outer envelope consisting of six petaloid divisions, while the inner is cup-shaped, with the margin entire, or variously indented, in the different species. On this cup depends much of the beauty of these flowers.

**NARCOT'ICS**, in medicine, soporiferous medicines, which by causing stupefaction take away the sense of pain. The elements by which narcotics act, are of a highly volatile and penetrating nature, since they deeply insinuate themselves like a vapour into the pores of the membranes and nerves, and by insensible degrees deprive the solids of their tone and motion.

**NAR'COTINE**, in chemistry, the pure narcotic principle of opium.

**NARD**, a sort of aromatic oil, with which the ancients used to anoint themselves at their feasts.

**NAR'WAL**, or **NAR'WHAL**, in zoology, the *Monodon monoceros*, a cetaceous animal found in the northern seas, sometimes attaining the length of fifty feet. When young it has two teeth or horns, but when old it has but one, which projects from the upper jaw and is spiral. It is sometimes, from this circumstance, called the *sea-unicorn*.

**NASTUR'TIUM**, in botany, a plant of the genus *Tropæolum*.

**NATA'LIS**, or **NATALIS DIES**, properly signifies a birth-day; but it was used by the ancients more particularly to signify the feast held on the anniversary of the birth-day of an emperor: hence in time it served to denote any sort of feast; and the primitive Christians used it in this sense.

**NATIV'ITY**, the day of a person's birth. The word nativity is chiefly used in speaking of the saints, as the nativity of St. John the Baptist, &c. But when we say *the Nativity*, it is understood to mean that of Jesus Christ, or Christmas Day.

**NATIONAL DEBT**, a sum borrowed by government, on the security of the existing taxes, which stand pledged to the lender for the payment of the interest of the sum borrowed. Thus, at the Revolution, for the purpose of avoiding unpopular taxation, the English government borrowed, on the credit of the existing taxes, of a company, then incorporated under the name of the Bank of England; and, as the system was found convenient, this debt increased. By the following statement, the progressive increase of the National Debt appears at the following political eras, thus:—At the Revolution, in 1688, it was 664,263*l.*; at the accession of Q. Anne, in 1702, 16,394,702*l.*; at the accession of George I., in 1714, 54,145,363*l.*; at the accession of George II., in 1727, 52,092,238*l.*; at the commencement of the American War, in 1775, 128,583,635*l.*; at the conclusion of the commencement of the American War, 238,484,870*l.*; at the commencement of the French Revolutionary War, in 1793, 239,350,148*l.*; at the conclusion of the French Revolutionary War, 699,315,561*l.*; on January 5th, 1817, when the English and Irish Exchequers were consolidated, 848,282,477*l.* In the 24 years from 1793 to 1816, both inclusive, the national expenditure exceeded the income derived from taxes, by upwards of four hundred and thirty millions, which were converted into a national annuity account, or in more popular language, formed part of the National Debt, at the rate of about 60*l.* for 3*l.* of the annuity; but since January 5th, 1817, the income derived from taxes yearly exceeding the expenditure, the savings, with other sums, were applied to the repurchase of the annuities created during the said 24 years, at rates varying from 71*l.* 19*s.* 3*d.* to 94*l.* 3*s.* 6*d.*, so as to take an average rate of 60*l.* per cent.

**NA'TROLITE**, in mineralogy, a variety of scolite, so called by Klaproth on account of the great quantity of soda it contains.

**NA'TRON**, in chemistry, native carbonate of soda, or mineral alkali. It is common in Egypt; and in Mexico and Columbia there are several natron lakes, from the bottom of which native mineral natron is dug up.

**NA'TURAL**, pertaining to nature: thus we speak of the *natural* growth of animals or plants.——*Natural orders*, in the botanic system, a classification of plants different from the sexual, founded on general common characters.——*Natural class*, an assemblage of several genera of plants, agreeing in their parts of fructification, general appearance, and qualities.——In music, we-



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*tural harmony* is that produced by the natural and essential chord of the mode. A *natural note* is that which is, according to the usual order of the scale, opposed to *flat* and *sharp* notes, which are called *artificial*.——*Natural*, in heraldry, is when animals, fruits, flowers, &c. are blasoned with their natural colours.

NATURAL HISTORY, in its most extensive sense, is the description of whatever is created, or of the whole universe, including the heavens and the earth, and all the productions of the earth. But in a more appropriate sense, it treats of those substances of which the earth is composed, and of those organized bodies, whether vegetable or animal, which adorn its surface, soar into the air, or dwell in the bosom of the waters. In this sense, natural history may be divided into two heads; the first teaches us the characteristics, or distinctive marks of each individual substance, whether animal, vegetable, or mineral: the second renders us acquainted with all its peculiarities, in respect to its habits, its qualities, and its uses. To facilitate the attainment of the first, it is necessary to adopt some system of classification, in which the individuals, that correspond in particular points, may be arranged together. A knowledge of the second head can only be acquired by a diligent and accurate investigation of each particular object.

NATURAL PHILOSOPHY, that branch of science which treats of the powers of nature, the properties of natural bodies, and their actions on one another; its legitimate pursuit being averse to all hypotheses, miracles, absurdities, and contradictions. It comprehends under it the several divisions of astronomy, chemistry, electricity, galvanism, hydrostatics, magnetism, mechanics, optics, pneumatics, &c.; and determines the arithmetical laws which accompany antecedent and consequent phenomena. Natural philosophy is, in fact, the great instrument of the philosophy of nature, furnishing it with the materials from which its conclusions must be drawn.

NATURALIST, a person well versed in the study of nature, and the knowledge of natural bodies, especially in what relates to animals, vegetables, metals, minerals, and stones.

NATURALIZATION, in law, the act of naturalizing an alien, or placing him in the condition (that is, investing him with the rights and privileges) of a natural subject, except that he is incapable of being a member of the privy council or of parliament, or of holding offices, grants, &c. In England this is done by act of parliament.

NATURE, a word of vast and comprehensive signification, embracing, as it were, the whole universe—all that is comprised under the superintending care of the great Creator. Thus when we say, Nature is benevolent and wise, we understand either the Deity himself, or a power performing the will of the Deity, and conducting every thing in this world under his order: a notion supported by some ancient systems of philosophy, adopted by poets, and most easy to popular idea. Independently of this, however, we often say Nature herself, &c. in a merely figurative sense; personifying the laws of nature, that is, the properties of matter. When, therefore, we say, that nature covers the earth with abundance, we mean that God covers the earth with abundance; when we say that nature is magnificent and inexhaustible, we mean that creation is magnificent and inexhaustible. When we speak of the study of nature, we mean the study of creation; which embraces first, the knowledge of things, and secondly the knowledge of the properties of things. Nature (meaning thereby the whole body of created things) presents an assemblage of objects in every respect worthy of the attention of mankind. As an animal whom it behoves to make provision for his wants, the knowledge of its productions, and the means by which they may be best obtained, are points of view in which no persuasive to the study is necessary; necessity, and the rich rewards of assiduity, have ever stimulated him. But the intellectual powers of man require other sources of enjoyment, and these too, nature can supply. Here, curiosity can never want a motive; here, all the pleasures of tender feelings or sublime conceptions may be enjoyed. Nature is made to conform in some degree to the hand of man, and resist only when his ignorance violates its essential order. It yields its secrets to his inquiries; to his sensibility it presents the most engaging images; and remains, to all ages, a picture perpetually renewed of the primitive creation of God.——There is another sense, too, in which the word *nature* is of continual occurrence; viz., the *nature* of man; by which we understand the peculiar constitution of his body or mind, or the qualities of the species which distinguish him from other animals. So also we express by this word, the essential qualities or attributes of any other thing; as the *nature* of blood, of a metal, of plants, &c. Again, when we allude to the established or regular course of things, we say, this or that event is not according to *nature*.——In the fine arts, *nature* often means the successful imitation of nature; but, with artists of a higher order, *nature* does not signify a *mere copy*, but as it were, the expression of the *ideal* of nature, at which she aims in all her formations, yet without ever absolutely attaining it.——By the *law of nature* is understood, that system of principles which human reason has discovered to regulate the conduct of man in all his various relations. In its most extensive sense, it comprehends man's duties to God, to himself, and to all mankind.

NAUCRA'RI, in antiquity, officers among the Athenians, who were so called because they were obliged to furnish one ship besides two horses for the public service.

NAUL'AGE, the freight or passage money for goods or persons by sea, or passage over a river.





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THE SHIPS OF THE ANCIENT BRITONS WERE LARGE OPEN BOATS, FRAMED OF LIGHT TIMBERS, WATTLED WITH HURDLES AND LINED WITH HIDES.

NAUMA'CHIA, the representation of a sea fight, which among the Romans formed a part of the Circensian games. These mock sea-fights are supposed to owe their origin to the time of the first Punic war, when the Romans first initiated their men in the knowledge of naval affairs. Afterwards they were intended both to entertain the populace, and improve the seamen. They were frequently, like other shows, exhibited at the expense of individuals to increase their popularity. Under the emperor Domitian such a vast number of vessels engaged as would have almost formed two regular fleets for a proper fight, and the channel of water was equal in dimensions to a natural river. The emperor Heliogabalus is said to have filled the channel where the vessels were to ride with wine instead of water. Tritons and seamonsters were often exhibited during the engagement. The *Naumachiarii*, or persons who fought in these exhibitions, were gladiators, slaves, criminals, &c. who were doomed to die, unless they were saved by the interposition of the people, or of the person presiding at the spectacle.

NAUSCOPY, the art of ascertaining the approach of vessels, or being on a vessel, the approach to land, at a very great distance, as, for instance, from one hundred to two hundred leagues.

NAU'SEA, in medicine, a sickness of the stomach, accompanied with a propensity to vomit; arising from a loathing of food, excited by some viscous humour that irritates the stomach.

NAU'TILUS, in natural history, a genus of marine animals, whose shell is formed of one continued piece, rolled as it were into a spiral form, and having its cavity divided into a great number of cells, by transverse partitions, each of which has a perforation, and is continuous to the others by means of a pipe carried the whole length of the shell. One species, found in the Mediterranean and Atlantic seas, is furnished with two arms united by a membrane, which it extends as a sail, and floats on the surface of the water, while with two other arms it rows or steers.

NA'VAL AR'CHITECTURE, or SHIP-BUILDING. The art of constructing vessels for the purposes of navigation, was, in all probability, anterior to the deluge, and is generally admitted to have been handed down by Noah to his posterity. That, in a rude state, it was practised in Egypt, there is no question; and the Greeks are supposed to have derived their knowledge of it from the Carthaginians. But neither in Greece nor in Rome, did naval architecture rise to what may be termed a scientific knowledge of the art of ship-building. The crusades first gave the impulse to improvements in ship-building, which, notwithstanding, continued for some time at a low ebb. The states of Venice and Genoa were the first to increase the size of their ships, but they were soon surpassed by the Spaniards, who first employed cannon. The Hanse Towns made such advances in naval architecture, that in the fourteenth century it was usual for them to let their ships out to foreign princes. In the reign of Henry IV. ships of considerable size began to be built in England, and they continued to increase in magnitude until the reign of Henry VIII., when two very large ships were built, namely, the Regent, of 1000 tons burthen, and the Henry Grace Dieu, which was larger. From the reign of Charles II. the navy of Great Britain acquired great importance, and in consequence of the wars which have been since carried on in several subsequent reigns, it has risen to its present state.——*Naval stores* comprehend all those articles made use of, not only in the royal navy, but in every other kind of navigation; as timber and iron for shipping, pitch, tar, hemp, cordage, sail-cloth, gunpowder, ordnance, and fire-arms of every sort, ship-chandlery wares, &c.

NAVA'LIS CORO'NA, a crown among the Romans given to him who first boarded an enemy's ship; it was a circle of gold representing the beaks of ships.

NAVIGATION, the art and science by which, in open seas, ships are conducted from port to port. This is effected by charts of the seas, and by keeping a journal of the courses from hour to hour, and the distance on each, by means of the log line, each knot on which corresponds to a mile of distance. Also by observations on the sun, moon, and stars, made with instruments, and checked by tables and almanacs.——Imperfect as were the means and knowledge of the ancients in this noble art, yet the Carthaginians, who superadded the greatest commercial enterprise to the greatest skill which had yet been attained, achieved the most brilliant results. They made the whole of the old world tributary to their city: not contented with exploring every nook and corner of the Mediterranean, they left behind the *ne plus ultra* which had hitherto almost entirely bounded the excursions of their predecessors, visited the Atlantic coasts of Europe, the British isles, and, pursuing the grand idea which afterwards led the Portuguese to India, discovered a vast extent of the western coast of Africa. The art of navigation gained nothing after the fall of Carthage; and the invasion of the northern barbarians effectually extinguished the few gleams of science which had survived her catastrophes. Everything remained stationary for centuries, until the returning day of civilization began once more to dawn upon the world,—when by the discovery of the magnet, and the invention of the mariner's compass which followed it, results of the most important kind were to be effected. [See MAGNET, COMPASS, &c.]

NAVIGATION LAWS, a most important branch of maritime law, defining the peculiar privileges to be enjoyed by British ships, and the way in which they shall be manned; as also the conditions under which foreign ships shall be allowed to engage in the trade of this country, either as importers or exporters of commodities. As long

THE RELATION OR UNION BETWEEN COMMERCE AND NAVIGATION IS SO INTIMATE, THAT THEY WILL ALWAYS EITHER FLOURISH OR FALL TOGETHER.



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THE MARINE IS THE NATURAL ELEMENT OF THE BRITISH POWER, AND SHIPS ARE THE MOVABLE RAMPARTS OF ALBION.

AT THE VICTORY OF THE NILE ONLY 218 BRITISH WERE KILLED, AND 677 WOUNDED; AT TRAFALGAR, ONLY 420 KILLED, AND 1112 WOUNDED.

ago as the reign of Henry VII. two of the leading principles of the late navigation law were distinctly recognized, viz. the prohibition of the importation of certain commodities, unless imported in ships belonging to English owners and manned by English seamen. But a first regard for our manufacturing and commercial interests required that great modifications should take place in our restrictive maritime policy, and we have accordingly, to a great extent, adopted what has been called the "reciprocity system" in our intercourse with other nations.

NAVE, in architecture, the middle or body of a church, extending from the baluster or rail of the choir to the chief door. Also, that part in the middle of a wheel where the spokes are fixed.

NAVY, the whole naval establishment of any country, including the collective body of ships, officers, men, stores, &c. That part of the navy of Great Britain which is distinguished by the title of the *royal navy*, comprehends all ships of war and their crews, &c. The ministerial management of the royal navy of Great Britain is entrusted to seven lords commissioners for executing the office of the lord high-admiral of England, commonly known by the title of lords of the admiralty. Commissioners of the navy are officers whose department is wholly distinct from that of the admiralty. The number of those resident in London is eight, and there are others stationed in different parts of the empire. They superintend the dock-yards, and provide the vessels which the admiralty requires for service. To the royal navy there also belong a victualling office, an office of sick and wounded seamen, and a pay office.

——In a long article on *naval warfare*, in the "Conversations Lexicon," so graphic a description of a presumed encounter between two ships of the line is given, that we are tempted to extract it:—"Assuming the advantage of the weather-gage, let us prepare for action. Top sails, top-gallant-sails, jib, and spanker, with the courses hauled up, ready to be set again, are good sails to fight under, for with them your ship is under perfect order to advance, manœuvre, or lie to. If there is an appearance of squally weather, it is well to have a reef in the topsails, in anticipation. The crew are called to quarters by beat of drum, every man going to the station which has been rendered familiar to him by frequent training, under the eye of his officers. The commander, standing in a conspicuous station on the quarter-deck, watches his own ship and the enemy, and conveys the order that the occasion may require by voice, or through the medium of his *aides*. Under him, the first lieutenant commands the offensive and defensive operations, and effects the various evolutions which he may direct, in relation to the position of the ship. The clues are stoppered, to keep the sails spread in the event of the sheets being shot away, and the yards are hung in chains, to obviate a like inconvenience from the cutting of the tiers. The carpenter rigs the pumps to prepare for a leak, collects his shot plugs to stop holes in the side, and fishes of wood to strengthen a mast, or yard, that may be wounded, and in danger of falling. The surgeon prepares, in the cockpit, to relieve the wounded." Tubs of water are collected in the tops, channels, and on deck, to be ready to extinguish fire; the decks are wet, to prevent the explosion of powder, and put out sparks that may fall there, and also sanded to prevent the men from slipping when splashy with blood or water. Finally, plenty of wads and shot, round, grape, and canister, are collected beside the guns, and the magazine is opened by the gunner and his crew, who prepare to pass the cartridges to the powder-boys. And now, having given three cheers, you bear down upon the enemy. It is a great object, in battering from ship to ship, to rake your enemy, if possible; that is, to get across his bow, or stern, out of reach of his guns, whilst yours sweep the whole length of his deck with fatal execution. If it is desirable to rake your enemy, it is equally so to avoid being raked in return. This double advantage can only be attained by superior sailing, or by great skill in manœuvring. In directing your fire, it is best to aim between wind and water, and also in the direction of the masts, for in this way the enemy may be soonest disabled, and a victory gained, with the least destruction of life. If, on the contrary, your own spars be so disabled that the enemy, having the worst in other respects, might yet effect his escape from your inability to make sail in pursuit; or even in the more desperate case of your being every way worsted; you may yet profit of your situation to bear down and board, as the last alternative. In the cast of this last chance, a hopeless cause may sometimes be restored; for in boarding, headlong valour, oftener than numbers, decides the struggle. When the enemy signifies that he yields, by hauling down his colours, a prize-master and crew are detailed; the prisoners are removed and chained, and as much exertion is made in repairing damages as was before exercised in effecting them."

NAZ'ARITE, among the Jews, one who had laid himself under the obligation of a vow to observe the rules of Nazariteship, either for his whole life, as was the case with Samuel, and John the Baptist; or only for a time, as those mentioned in Numb. vi. 18, 19, 20, and Amos ii. 11, 12. The rules of Nazariteship, during the time specified in the vow, obliged the man or woman to more than ordinary degrees of purity.

NEAP'-TIDES, the tides in the second and last quarters of the moon. Also low tides, not so high nor so swift as the spring-tides.

NEAT, all kinds of bovine cattle, as the ox, cow, &c. Thus *Neat's-foot oil* is an oil extracted from the feet of oxen; and *Neat's leather*, leather made of the hide of an ox.

NEB'ULÆ, in astronomy, are certain spots in the heavens; some of which, by



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the discoveries of Dr. Herschel, are found to consist of clusters of telescopic stars, and others appear as mere luminous spots of different forms. Their distance and real size exceed all powers of human conception.——At a meeting of the British Association, "Sir John Herschel read a paper, entitled, 'On the reduced observations which he had made at the Cape of Good Hope, in 1835-6 and 7, on Double Stars and Nebulæ.' In this paper, illustrated by drawings, Sir John described the remarkable appearances of the southern heavens, and made striking *viva voce* additions to the brief technical notes which belonged to his catalogue of these stars. Some of the nebulæ were of extraordinary forms. In one they looked like bunches of grapes, and, in another, like bees swarming, so that it was impossible to define them. He also mentioned the vivid colours of some of the stars: one, in particular, was a fine blue, approaching to a verditer green. Some were so close as to be inseparable; and others seemed as if they were groups formed by family compact. He expressed a hope, that glasses of higher powers than had hitherto been attained by human art, might hereafter be applied to the examination of these double stars, so as to ascertain their nature and motions, whilst changing their positions in every way, and often so as to occult each other. He noticed generally of their distribution over the heavens, that there were fewer in the southern than in the northern hemisphere, and that in the former they mostly consisted of a larger and smaller star, which raised the question whether the lesser orbs were planetary, or had only a reflected light, like the earth's moon. Again, touching on the singular phenomena presented in the colours of these stars, generally yellow and red, he instanced the planet Mars, in our own system, as analogous to them, his red aspect being quite different from the yellow radiance whence he derives his brilliancy. The drawings of the nebulæ fully bore out Sir John's description of their being like wisps and tails thrown over the face of the heavens."—*Literary Gazette.*——In heraldry, the term *nebula* is used to describe a line drawn with undulations resembling the form of clouds; or a shield or charge divided by several such lines drawn across it.

NECES'SITY, the cause of that which cannot be otherwise, or whatever is done by a power that is irresistible; in which sense it stands opposed to freedom. The schools distinguish a physical necessity and a moral necessity; and a simple or absolute necessity, and a relative one. *Physical necessity*, is the want of a principle, or of a natural means necessary to act, which is otherwise called a physical or natural impotence. *Moral necessity*, is only a great difficulty, such as that arising from a long habit, a strong inclination, or violent passion. *Simple* or *absolute necessity*, is that which has no dependence on any state or conjuncture, or any particular situation of things, but is found every where, and in all the circumstances in which the agent can be supposed. *Relative necessity*, is that which places a man in a real incapacity of acting or not acting in those circumstances, and that situation he is found in, though in other circumstances, and in another state of things, he might act or not act. When a man's actions are determined by causes beyond his control, he acts from *necessity*, and is not a free agent.

NECK, in anatomy, that slender part situated between the head and the trunk of the body. The neck consists of the following parts: 1. the common integuments; 2. seven vertebræ; 3. a number of muscles which serve to move the head, the neck, the larynx, the pharynx, and the os hyoides; 4. a number of very large arteries, as the carotids, internal and external, and the vertebral ones; 5. large veins, as the jugular, internal and external, and the vertebral ones; 6. large nerves, the par vagum, the intercostals, the recurrent, the diaphragmatics, and the *vertebral*; 7. a part of the spinal marrow; 8. the aspera arteria, or trachea, particularly the larynx, in which is an eminence called the pomum adami; 9. the pharynx, with a part of the œsophagus; 10. the thyroide, with some other smaller glands.——*Neck of land*, a long narrow tract of land projecting from the main body, or a narrow tract connecting two larger tracts.——Also, by *neck* we denote any thing long in the form of the neck, as the neck of a bottle, a violin, &c.

NECROL'OGY, a register of the deaths of benefactors in a monastery. Formerly also, what is now called *martyrology* was called *necrology*.——A register of distinguished persons who die within a certain period (not a record of their lives and actions, for that is *biography*) is also known by this term.

NEC'ROMANCY, a sort of magic practised by the Jews, Greeks, and Romans, by which they attempted to raise the dead or make them appear. The witch of Endor is a striking example of a bold and artful deception of this kind.

NEC'RONITE, in mineralogy, fetid felspar, a mineral which, when struck or pounded, exhales a fetid odour like that of putrid flesh.

NECROP'OLIS, in antiquity, the name given to some ancient cemeteries in the vicinity of large cities. It has also been given to some of our modern ones.

NEC'TAR, in mythology, the supposed drink of the gods, and which was imagined to contribute much towards their eternal existence. It was, according to the fables of the poets, a most beautiful and delicious liquor, far exceeding any thing that the human mind can imagine. It gave a bloom, a beauty and a vigour, which surpassed all conception, and together with *ambrosia* (their solid food), repaired all the decays or accidental injuries of the divine constitution.——Also a sweet wine of Scio.

NEC'TARINE, a fruit differing from the common peach, of which it is a species, in having a smoother rind and a firmer pulp.

NECESSITY, THOUGH REPRESENTED IN THE HEATHEN MYTHOLOGY AS BLIND AND UNINTELLIGENT, WAS WORSHIPPED AS A GODDESS.

NECROMANCY, AS DESCRIBED IN HOMER'S ODYSSEY, CONSISTED MERELY IN THE PERFORMANCE OF A SACRIFICE WITH PECULIAR SOLEMNITIES.



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NECTA'RIUM, or NEC'TARY, in botany, that part of the corolla destined for the reception of the honey-juice of the plant: it is very various in its figure; being sometimes only a hollow in a petal, sometimes a little squama or tubercle, and sometimes a plain tube.

NEE'DLE, a steel implement used in sewing, embroidery, &c. Needles are made of various sizes, by a wire-drawing apparatus, then cut, the heads flattened and punched, the points filed, and the polish given by working quantities with emery-dust. At a late meeting of the British Association were exhibited several specimens illustrating the process of manufacturing needles by patent machinery, invented by Mr. S. Cocker, of Sheffield; by which it appeared that one hundred patent machines, which would occupy four rooms, each about 25 yards by 10, will, by the power of a six-horse steam-engine, be sufficient to produce 14,000,000 needles per week, and that the cost, by this method, would be no more than one penny per thousand!——*The Magnetical Needle*, in navigation, a needle touched with a magnet, or loadstone, and sustained on a pivot in the centre of the compass, where it assists the mariner by its general direction from pole to pole, or, as it is said in Europe, its pointing to the north. [See MAGNET.]

NEFASTI DI'ES, an appellation given by the Romans to those days wherein it was not allowed to administer justice, or hold courts.

NEGATION, in logic, a declaration that something is not, or the affirming one thing to be different from another; as, the soul is *not* matter.

NEG'ATIVE, in general, something that implies a negation: thus we say, negative quantities, negative signs, negative powers, &c. "Our words and ideas," says Dr. Watts, "are so unhappily linked together, that we can never know which are positive, which negative ideas, by the words that express them: for some positive terms denote a negative idea, as *dead*; and there are both positive and negative terms invented to signify the same and contrary ideas, as *unhappy* and *miserable*." If we say, such a thing is "not a man," or "not white," nothing is determined; the thing may be a dog, and it may be black: something of a positive character is necessary to express what it is.——*Negative* and *positive quantities*, in mathematics, are such as are, respectively, greater or less than nothing. In algebra, negative quantities are designated by —, and positive ones by +, so that — 4 + 4 = 0.——*Negative electricity*, that state of bodies in which they are deprived of some portion of the electricity which they naturally contain.——*Negative pregnant*, in law, a negative which implies an affirmation; as when a person denies having done a thing in a certain manner or at a certain time, as stated in the declaration; which implies that he did it in some manner.

NE'GRO (Latin, *niger*, black), a variety of the human species deriving their name from one of their most striking characteristics, their black colour. Their native region seems to be the central portion of Africa; but the Negro formation prevails also in Eastern and Western Africa, and, extending southwards, is most strongly marked in Guinea. The origin of the Negroes, and the cause of this remarkable difference from the rest of the human species, has been the source of much argument among naturalists. Mr. Boyle has observed, that it cannot be produced by the heat of the climate; for though the heat of the sun may darken the colour of the skin, yet experience does not show that it is sufficient to produce a true blackness, like that of the Negroes. In Africa itself many nations of Ethiopia are not black, nor were there any blacks originally in the West Indies. In many parts of Asia, under the same parallel with the African region, inhabited by blacks, the people are but tawney. He adds, that there are Negroes in Africa, beyond the southern tropic, and that a river sometimes parts nations, one of which is black and the other only tawney. Others allege that the gall of Negroes is black, and being mixed with their blood, is deposited between their skin and scarf-skin. This subject has lately been treated by Mr. R. M. Glover, who read to the British Association a paper on the functions of the *rete mucosum* and *pigmentum nigrum* in the dark races, and particularly in the Negro. The editor of the Year Book of Facts gives the following synopsis of it: "The degree of development of the rete mucosum and its pigment, determines the power of resisting the excessive heat of the sun in tropical climates, as evinced by the Negro (the type, in this respect, of the dark races), the European, and the Albino. The *modus operandi* must be discovered by an attention to both the physical and vital properties of this peculiar organization. The doctrine at present taught on the subject is, that the black skin absorbs more heat, but that the cutis vera of the Negro is not so liable to inflammation from a high temperature as that of a European from a lower temperature; and as the radiation of caloric from black must be greater than from white skins, the possessor of the former must cool more readily, and enjoy greater alternations of heat and cold. The former part of this doctrine is founded on the experiments and deductions of Sir Everard Home, as detailed in his paper in the Philosophical Transactions. A number of experiments detailed in the paper on the vesicatory powers of differently coloured substances, under the concentrated rays of the sun, contradicted the deductions of Sir E. Home, and hence arose the necessity of looking to the vital properties of the skin of the Negro, and the mode in which it is likely to be affected by the radiating and absorbing power of the pigment with which he is provided. Blumenbach and Winterbottom state, that the Negro perspires more readily and freely than the European; and Davy

NEEDLES ARE SAID TO HAVE BEEN FIRST MADE IN ENGLAND BY A NATIVE OF INDIA IN 1545; BUT THE ART WAS LOST AT HIS DEATH.

THE NEGRO CHARACTER, IF INFERIOR IN INTELLECTUAL VIGOUR, IS MARKED BY A WARMTH OF SOCIAL AFFECTIONS, AND A TENDERNESS OF FEELING.



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says, 'In the inhabitants of the tropics, the exhalent arteries of the skin seem unusually expanded, and the whole apparatus peculiar to this secretion unusually developed; and I believe that the blood itself is less viscid, more fluid, and flows more readily through the vessels, so as to promote perspiration, and, by that means, contributing to the cooling of the surface. And being cooled itself, it contributes again, when it flows back upon the heart, to the reduction of the temperature of the internal parts.' Were the inhabitant of the tropics not possessed of this peculiar organization, his system could not respond to the stimulus of heat, by a determination of fluid towards the surface. Doubtless the excessive absorption of heat by his skin is useful in promoting this effect; but in the system qualified to respond to the stimulus of heat, and not in the organization of the skin alone, must an explanation be sought of the capability of the Negro to withstand the heat of the tropical regions."—It has long also been the prevailing opinion among naturalists that the Negro race is inferior, both in the organization and in intellectual powers, to the European; and that, in all the points of difference, it exhibits an approach to the Monkey tribes. This theory has led Dr. F. Tidemann, professor of anatomy and physiology in the university of Heidelberg, to institute a rigid inquiry into the validity of this opinion. He accordingly examined an immense number of brains of persons of different sexes, of various ages, and belonging to different varieties of the human race, both by ascertaining their exact weight, and also by accurate measurement of the capacity of the cavity of the cranium; and he has ascertained that no perceptible difference exists either in the average weight or the average size of the brain of the Negro and of the European: and the nerves are not larger, relatively to the size of the brain, in the former than in the latter. In the external form of the brain of the Negro a very slight difference only can be traced from that of the European; but there is absolutely no difference whatsoever in its internal structure, nor does the Negro brain exhibit any greater resemblance to that of the orang-outang than the brain of the European; excepting, perhaps, in the more symmetrical disposition of its convolutions. Many of the results which Dr. T. has thus deduced from his researches are at variance with the received opinions relative to the presumed inferiority of the Negro structure, both in the conformation and in the relative dimensions of the brain; and he ascribes the erroneous notions which have been hitherto entertained on these subjects chiefly to prejudice created by the circumstance that the facial angle in the Negro is smaller than in the European, and consequently makes, in this respect, an approach to that of the ape, in which it is still farther diminished. He denies that there is any innate difference in the intellectual faculties of these two varieties of the human race; and maintains that the apparent inferiority of the Negro is altogether the result of the demoralizing influence of slavery, and of the long continued oppression and cruelty which have been exercised towards this unhappy portion of mankind by their more early civilized, and consequently more successful, competitors for the dominion of the world. [See SLAVE-TRADE.]

NEHEMI'AH, a canonical book of the Old Testament, so called from the name of its author. Nehemiah was born at Babylon during the captivity, and succeeded Ezra in the government of Judah and Jerusalem. He was a Jew, and was promoted to the office of cup-bearer to Artaxerxes Longimanus, king of Persia; when the opportunities he had of being daily in the king's presence, together with the favour of Esther the queen, procured him the favour of being authorized to repair and fortify the city of Jerusalem, in the same manner as it was before its destruction by the Babylonians.

NE INJUSTE VEX'ES, in law, a writ that lies for a tenant who is distrained by his lord for more services than he is obliged to perform, being a prohibition to the lord not to distrain or vex his tenant.

NEMÆ'AN GAMES, in antiquity, celebrated games in Greece, deriving their name from Nemea, a village between the cities of Cleonæ and Philus, where they were celebrated every third year. They were instituted in memory of Archemorus or Opheltes; but, after some intermission, were revived by Hercules, in honour of Jupiter, after his victory over the Nemæan lion. The exercises were chariot races, and all the parts of the Pentathlon.

NEM. CON. for *Nemine contradicente* (no one opposing), a term chiefly used in the House of Commons when any thing is carried without opposition.——*Nemine dissentiente* (no one dissenting), are terms similarly applied in the House of Lords.

NEM'OLITE, in mineralogy, an arborized stone.

NEOD'OMODE, in ancient Greece, a person newly admitted to citizenship.

NEOL'OGY, the introduction of new words into a language. The progress of science has of late years necessarily given rise to many *neologisms;* but the practice of coining new words to express old ideas—one of the sins of careless writers—cannot be too severely reprehended. Another innovation, not less objectionable, is that of making a modern Babel of our speech, by interlarding it with foreign terms and phrases. Those who thus delight in showing their learning, should remember that hybrid phraseology betrays a sad ignorance of their vernacular tongue, and exposes them to the charge of silly affectation.

NEOME'NIA, in antiquity, a festival observed at the beginning of a lunar month in honour of all the gods, but particularly Apollo.

NE'OPHYTE, a new convert or proselyte: a name given by the early Christians to such as had recently been converted from paganism.



THE NAME OF NEGROLAND, OR NIGRITIA, HAS BEEN GIVEN TO AN IMMENSE EXTENT OF COUNTRY IN THE INTERIOR OF AFRICA.

IN AMERICA THEY GIVE THE NAME OF "CABRES" TO THE DESCENDANTS OF A BLACK MAN AND A MULATTO WOMAN, AND VICE VERSA.

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NEPEN'THE, in antiquity, a kind of magic potion, mentioned by Greek and Roman poets, which was supposed to make persons forget their sorrows and misfortunes. It was the juice or infusion of a plant now unknown: Homer says it grew in Egypt, and further observes, that Helen made use of it to charm her guests, and make them forget their miseries and their pains.

NEPH'ELINE, a mineral found mixed with other substances, primitive or volcanic, in small masses or veins. It is white or yellow.

NEPH'RITE, in mineralogy, a subspecies of jade, occurring in granite and gneiss, remarkable for its hardness and tenacity. It is of a leek green colour, and was formerly worn as a remedy for diseases of the kidneys.——*Nephritic wood*, a species of fine-grained compact wood, grown in South America. It gives a blue colour to water, spirits of wine, &c.; but which is changed to yellow by acids, and again to blue by alkalies.

NEPHRI'TIS, in medicine, an inflammation of the kidneys. Hence *Nephritice*, medicines proper for diseases of the kidneys, particularly for urinary calculi.

NE PLUS UL'TRA, *i.e.* no farther, the extremity, or utmost extent to which any thing can go.

NEPTUNA'LIA, in antiquity, feasts observed by the Romans in honour of Neptune. They differed from the *Consualia*, in which that god was considered as presiding over horses and the manege; whereas the *Neptunalia* were feasts of Neptune, in his more general character as god of the sea.

NEPTU'NIAN, or NEPTUNIST, one who adopts the theory that the substances of which the earth is composed were formed from aqueous solution; opposed to the *Plutonic* theory, which attributes the earth's formation to the action of fire.

NE'REIDS, in mythology, sea-nymphs, daughters of Nereus and Doris, and celebrated for their beauty. In ancient monuments the Nereids are represented as riding upon sea-horses, sometimes with the human form entire, and at others with the tail of a fish.

NERI'TITE, a petrified shell of the genus *Nerita*.

NE'RIUM, in botany, a genus of plants class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs or trees, as the sweet-scented rose-bay, rhododendron, &c.

NERVES, long, white, medullary cords, which pass in pairs from the brain and the spinal marrow, as instruments respectively of sensation and volition; of which nine pair proceed from the brain, and thirty from the spine. They spread over the body like fine net-work. Formerly the word *nerve* meant a *sinew*: this accounts for the opposite meanings of the word *nervous*, which sometimes signifies strong, sinewy; and sometimes weak and irritable.

NER'VOUS SYSTEM, the arrangement within an animal of the brain, spinal marrow, and nerves, constituting the means of perception, volition, and muscular action. In treating of the physiology of the nervous system, Dr. Hooper has the following remarks:—"In the living man there is an immaterial thinking substance, *or mind*, constantly present, and every phenomenon of thinking is to be considered as an affection or faculty of the mind alone. But this immaterial and thinking part of man is so connected with the material and corporeal part of him, and particularly with the nervous system, that motions excited in this, give occasion to thought, and thought, however occasioned, gives occasion to new motions in the nervous system. This mutual communication, or influence, is assumed with confidence as a fact: but the mode of it we do not understand, nor pretend to explain; and are therefore not bound to obviate the difficulties that attend any of the suppositions that have been made concerning it. The phenomena of the nervous system occur commonly in the following order: The impulse of external bodies acts upon the sentient extremities of the nerves; and this gives occasion to perception or thought, which as first arising in the mind, is termed *sensation*. This sensation, according to its various modifications, gives occasion to *volition*, or the willing of certain ends to be obtained by the motion of certain parts of the body; and this volition gives occasion to the contraction of muscular fibres, by which the motion of the part required is produced. As the impulse of bodies on the sentient extremities of a nerve does not occasion any sensation, unless the nerve between the sentient extremity and the brain be free; and as, in like manner, volition does not produce any contraction of muscles, unless the nerve between the brain and muscle be also free; it is concluded from both these facts, that sensation and volition, so far as they are connected with corporeal motions, are functions of the brain alone, and it is presumed, that sensation arises only in consequence of external impulse producing motion in the sentient extremities of the nerves, and of that motion being thence propagated along the nerves to the brain; and, in like manner that the will, operating in the brain only, by a motion begun there, and propagated along the nerves, produces the contraction of muscles." * * * * "From this view of the parts of the nervous system, it appears, that the beginning of motion in the animal economy, is generally connected with sensation; and that the ultimate effects of such motion are chiefly actions depending immediately upon the contraction of moving fibres, between which and the sentient extremities the communication is by means of the brain." Of the NERVOUS FLUID, or *nervous principle*, the same intelligent author thus writes—"The vascularity of the cortical part of the brain and of the nerves themselves, their softness, pulpiness, and natural humid appearance, give reason to believe that between the medullary particles of which they are principally composed, a fine fluid is constantly secreted, which may be

IT IS ASSERTED, THAT WARM BATHING, VEGETABLE DIET, EXERCISE, AND RECREATION, ARE THE BEST REMEDIES FOR NERVOUS DISEASES.



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fitted to receive and transmit, even more readily than other fluids do, all impressions which are made on it. It appears to exhale from the extremities of the nerves. The lassitude and debility of *muscles* from too great exercise, and the dulness of the sensorial organs from excessive use, would seem to prove this. It has no *smell* nor *taste;* for the cerebrine medulla is insipid and inodorous. Nor has it any colour, for the cerebrum and nerves are white. It is of so subtile a *consistence* as never to have been detected. Its *mobility* is stupendous; for in less than a moment, with the consent of the mind, it is conveyed from the cerebrum to the muscles like the electric matter. Whether the nervous fluid be carried from the organ of sense in the *sensorial* nerves to the cerebrum, and from thence in the *motory* nerves to the muscles, cannot be positively affirmed. The *constituent principles* of this liquid are perfectly unknown, as they cannot be rendered visible by art or proved by experiment. Upon making a ligature upon a nerve, the motion of the fluid is interrupted, which proves that something corporeal flows through it. It is therefore a weak argument to deny its existence because we cannot see it; for who has seen the matter of heat, oxygen, azote, and other elementary bodies, the existence of which no physician in the present day doubts? The *electric matter,* whose action on the nerves is very great, does not appear to constitute the nervous fluid; for nerves exhibit no signs of spontaneous electricity; nor can it be the *magnetic matter,* as the experiment of Gavian with the magnet demonstrates; nor is it *oxygen,* nor *hydrogen,* nor *azote;* for the first very much irritates the nerves, and the other two suspend their action. The nervous fluid therefore, is an *element* sui generis, which exists and is produced in the nerves only; hence, like other elements, it is only to be known by its effects. The pulpous softness of some nerves, and their lax situation, does not allow them and the brain to act on the body and soul only by *oscillation.* Lastly, a tense chord, although tied, oscillates. The use of the nervous fluid, is, 1. it appears to be an intermediate substance between the body and the soul, by means of which the latter thinks, perceives, and moves the muscles subservient to the will. Hence the body acts upon the soul, and the soul upon the body. 2. It appears to differ from the *vital principle;* for parts live and are irritable which want nerves, as bones, tendons, plants, and insects.'

NEST, a bed or habitation where animals rear their young. The exquisite ingenuity which various creatures display in constructing their nests has always been a subject of deserved admiration. In various parts of this volume we have had occasion to describe some of these ingenious proofs of animal instinct: it is therefore unnecessary here to give examples.

NESTO'RIANS, a sect of Christians still said to be subsisting in some parts of the Levant, whose patriarch resides in Seleucia; their principal see is in Persia, and their distinguishing tenet is, that Mary, though the mother of Jesus Christ, is not the mother of God.

NET, or NEAT, in commerce, that which is pure, and without adulteration or deduction. Hence we say a *net* rent, &c. A net produce is a term used to express any commodity, all *tare* and charges deducted.

NET-MAKING, a useful art, by which fibrous materials are knotted in a regular manner, and continued over a large surface; as in the nets for catching fish, &c.

NETTINGS, in a ship, a sort of gratings made of small ropes, brought together with rope-yarn or twine, and fixed on the quarters, the tops, &c.

NETTLE, in botany, the *Urtica* of Linnæus, a well-known perennial. The species are mostly herbaceous, and are usually covered with extremely fine, sharp, tubular hairs, placed upon minute vesicles, filled with an acrid and caustic fluid, which, by pressure, is injected into the wounds caused by the sharp-pointed hairs: hence arises the well-known stinging sensation when these plants are incautiously handled. It is accounted diuretic, and is good as a purifier of the blood. "The nettle, is generally visited by exterminating warfare among agriculturists: nevertheless it has its uses, and the Dutch have contrived to make it serviceable, and even advantageous. The young leaves are good eating, the stem is woven into coarse stuffs, and the jockeys mix the seed with the food of horses, in order to give them a sleek coat; and the roots, when washed, and mixed with alum or common salt, give a yellow dye. It is a wholesome food for horned cattle when young; it will grow in the most arid soil, demands no cultivation, for it stands all weathers, and sows itself. It may be cut two or three times in the summer, and is one of the earliest of plants: when cut for hay, it must not be too old, for then the cattle refuse to eat the dried stalks."—*Athenæum.*

NEUROL'OGY, in medicine, a description of the nerves of animal bodies, or the doctrine of the nerves.

NEUROPTERA, an order of insects in the Linnæan system, including those which have four transparent, naked wings, reticulated with veins, as the dragon fly, the lion ant, &c.

NEURO'SES, in medicine, nervous disorders; the second class of diseases in Cullen's Nosology.

NEUROT'OMY, in anatomy, the art or practice of dissecting the nerves.

NEUTER, in grammar, a gender of nouns for names which are neither masculine nor feminine.——*Neuter verbs,* by some grammarians called *intransitive verbs,* are those which govern nothing, and that are neither active nor passive. When the action expressed by the verb has no object to fall upon, but the verb alone supplies the whole idea of the action, the verb is said to be neuter; as, *I sleep, we walk,* they *stand still.*

NEUTRALITY, in politics, that state of





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IT IS STATED AS A FACT, THAT WHEN THE BRITISH TROOPS WERE SENT TO PORTUGAL IN 1826, SOME PAPERS SENT REPORTERS WITH THE ARMY.

a nation in which it does not take part, directly or indirectly, in a war between other nations; but from such neutral position arise certain rights and obligations towards the belligerents, through the infraction of which the neutral power frequently becomes involved in hostilities with one or the other of the belligerents.

NEUTRALIZATION, in chemistry, the process by which an acid and an alkali are so combined as to disguise each other's properties. Thus, when sulphuric acid and soda are mixed together, the properties either of the one or the other preponderate, according to the properties of each; but there are certain proportions, according to which, when they are combined, they mutually destroy or disguise the properties of each other, so that neither predominates, or rather so that both disappear. When substances thus mutually disguise each other's properties, they are said to *neutralize* each other.

NEUTRAL SALTS, in chemistry, those salts which partake of the nature of both an acid and an alkali.

NEWSPAPER, a periodical publication which appears on some stated day or days in the week, containing an account of the political and domestic occurrences of the time, and which is capable of doing good or mischief, according as it is honestly or dishonestly, ignorantly or intelligently conducted. The London newspapers, as Mr. M'Culloch very truly observes, have become remarkable for the great mass and variety of matter which they contain, the rapidity with which they are printed and circulated, and the accuracy and copiousness of their reports and debates. These results are obtained by a large expenditure and considerable division of labour. The reports of parliamentary proceedings are obtained by a succession of able and intelligent reporters, who relieve each other at intervals of three quarters of an hour, or occasionally less. A newspaper cannot aim at copious and correct reports with less than ten reporters for the House of Commons; and the expense of that particular part of a morning newspaper's establishment exceeds 2000*l.* per annum.—A writer in Fraser's Magazine, who appears to know his subject well, says, "the public who know nothing of the details of a newspaper, have a false notion of the mode in which reports are given. They imagine they are taken in short hand, and then faithfully transcribed from the notes of the reporter. Short hand is, however, little used by good reporters, except for striking passages of a speech which are to be given verbatim. Were the whole of a long debate in the House of Commons to be given from short hand notes, the quantity would fill a paper three times as large as the *Times*, and neither the speaker nor the reader would be the gainer. Verbatim speeches would contain a great deal of useless verbiage, and, in many cases, much nonsense which the speakers themselves would be sorry to see in print. Reporters generally take the leading points of a debate; and when they write out their report, they will fill up the chasms partly from recollection, and partly from the necessary connexion of words which the passages themselves supply, and which are the more or less those which the speaker would have used, according to the intimacy of the reporter with his style." On the nights of prolonged debate, when the houses sit late, some of the reporters may be compelled to go back and take what is called a *double turn;* and so active and able are many of these gentlemen, that it is not an unfrequent thing for one reporter to supply from the notes of three quarters of an hour, to the paper upon which he is engaged, from a column and a half to two columns of closely printed matter.—By the act 38 Geo. 3. c. 78, it is declared, that no person shall print or publish a newspaper until an affidavit has been delivered at the stamp-office, stating the name and places of abode of the printer, publisher, and proprietor; specifying the amount of the shares, the title of the paper, and a description of the building in which it is intended to be printed. A copy of every newspaper is to be delivered within six days to the commissioners of stamps, under a penalty of 100*l.* And persons publishing papers without the name and abode of the printer may be apprehended, and carried before a magistrate; and a peace officer, by warrant of a justice of peace, may enter any place to search for printing presses, types, &c. kept without the notice required by the act, and may carry them off, with all printed papers there found.—It appears that the first newspaper published in modern Europe made its appearance at Venice, in 1536; but the jealousy of the government would not allow of its being printed; so that, for many years, it was circulated in manuscript! It would seem that newspapers were first issued in England by authority, in 1588, during the alarm occasioned by the approach of the Spanish armada to our shores; in order, as was stated, by giving real information, to allay the general anxiety, and to hinder the dissemination of false and exaggerated statements. From this era, newspapers, of one sort or other, have, with a few intermissions, generally appeared in London; sometimes at regular, and sometimes at irregular intervals. For more than a century past they have gone on gradually increasing in size, as well as in commercial and political importance; and when the late reductions in the advertisement and stamp duties took place, an extraordinary impetus was given to their circulation. Thus encouraged, the "broad sheets" grew still broader; till at length, when overcharged with matter, the "leading journal" occasionally issued its gratuitous supplementary papers, equalling in size their parent original, thereby astounding the world by the vastness of their contents, and puzzling many an anxious quidnunc, who wandered over the mighty mass of print uncertain where to fix his inquiring eye. For our own part, although we cannot but admire the

THE LEADING FRENCH PAPERS DIFFER MUCH FROM THOSE OF BRITAIN AND THE UNITED STATES, BY THE ENTIRE ABSENCE OF ADVERTISEMENTS.



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mechanical and mental power which calls these gigantic efforts of the press into existence, we more than doubt the necessity or policy of their frequent repetition.

NEW STYLE, the method of reckoning the days of the year in accordance with the Gregorian Calendar, which adjusts the odd hours and minutes, by which the earth's revolution exceeds 365 days, and renders celestial phenomena and terrestrial reckoning equal.

NEWTO'NIAN SYSTEM, or *Newtonian Philosophy*, a phrase often applied to the Copernican or Solar system, which was generally adopted before Newton's time; and by others applied to the laws of planetary motion, first promulgated by Kepler and Hooke; but strictly applicable only to certain geometrical and analytical demonstrations of those known laws, as developed by the genius and industry of Sir Isaac Newton. The chief parts of the Newtonian philosophy are explained by the author in his "Principia."

NICE'NE CREED, in ecclesiastical affairs, a particular creed, or confession of faith, drawn up by the clergy in the council of Nice, and since adopted by the church of England.

NICHE, in architecture, a hollow or recess in a wall, for the reception of a statue or bust.

NICK'EL, in mineralogy, a hard silver-like metal, which, combined with copper, forms the *petit-or* of the shops; it is slightly magnetic, and forms a large proportion of the meteoric masses which fall to the earth. The ore in which it was first found, and from which it is principally obtained at present, is the *Kupfer nickel*, or sulphuret of nickel, mixed also with arsenic, iron, and cobalt.——*Sulphuret of nickel* is of a yellow colour, like iron pyrites, and brittle.——*Chloride of nickel* is prepared by evaporating the muriate to dryness. When calcined in a retort, one portion, of an olive-green colour, remains in the bottom of the vessel, while another sublimes, and crystalizes in small brilliant plates of a gold-yellow colour; these are the *deutochloride*. The nitric and nitro-muriatic acids are the most appropriate solvents of nickel.

NIC'OTINE, in chemistry, a peculiar principle, highly poisonous, obtained from tobacco. It is precipitated from its solution by the tincture of nutgalls.

NIC'TATING, or NICTITATING MEM'BRANE, a very thin and fine skin, chiefly found in the bird and fish kind, which covers the eyes of these creatures, sheltering them from dust or from too much light, yet is so thin and pellucid that they can see pretty well through it.

NIDIFICATION, the act or operation of building a nest, and the hatching and feeding of young in the nest.

NI'DUS, among naturalists, signifies a nest, or proper repository for the eggs of birds, insects, &c. wherein the young of these animals are hatched and nursed.

NIGHT, that part of the diurnal period during which either hemisphere is turned away from the sun; the time of darkness. Night was originally divided by the Hebrews, and other eastern nations, into three parts, or watchings. The Romans, and afterwards the Jews from them, divided the night into four parts, or watches, the first of which began at sunset and lasted till nine at night, according to our way of reckoning; the second lasted till midnight; the third till three in the morning; and the fourth ended at sunrise. In scripture language, this word is sometimes used for the times of heathenish ignorance, as Rom. xiii. 12; for adversity and affliction, as Isaiah xxi. 12; and for death, as John ix. 4.

NI'GHTINGALE, in ornithology, a species of *motacilla*; a bird more eminent for the sweetness of its note, than for its beauty. It is of the size of the linnet, but in shape it more resembles the red-breast; the head is small, the eyes are large, and their iris pale; the beak is dusky, slender, and moderately long; the head, neck, and back are of a greyish brown; the upper parts of the wings, and about the tail, have a reddish tinge mixed with this; and the throat, breast, and belly are of a pale ash colour. This bird is well known in the southern counties of England for the fineness of its tones, especially in the evening. It is equalled only by the sky-lark in sprightliness, compass, and execution; but the latter is greatly inferior in mellowness and plaintiveness, in which two qualities the wood-lark alone approaches the nightingale. It is the constant theme of the eastern poets; and by these is represented as attached, in a most extraordinary degree, to the *rose*, their favourite flower. It is very generally supposed that the nightingale will live but a very short time in a state of confinement. Our own experience, however, proves the contrary; having kept one upwards of three years in a cage, which delighted us with its song during eight months of the year. It was regularly fed with meal worms, as well as with boiled eggs and raw meat chopped very fine. But this is nothing to what Dr. Weissenborn relates. He says that a nightingale which had been caught in Germany, in its adult state, lived nearly thirty years confined in a cage One of the bird's owners, a tradesman at Weimar, who kept it for sixteen years, paid great regard to the bird's cleanliness, and *always* fed it on *pupæ* of ants, either fresh or dry, according to the season, with a few meal worms a day; and whenever the bird appeared unwell, a spider, if it could be obtained. It sung beautifully throughout the year, except in April and May, when it moulted.

NI'GHTSHADE, or *Deadly Nightshade*, in botany, a poisonous plant, bearing a bell-shaped corolla. [See ATROPA.]——The *Atropa belladonna* is supposed to have been the plant which the Roman soldiers, urged by hunger, ate in the Parthian war. Plutarch tells us, that on this occasion it produced loss of the memory and senses; and that the unfortunate victims of it were prone to move every stone that they met with, as though in some important pursuit;



NICKEL IS CONSTANTLY ATTRACTED BY THE MAGNET, AND, WHAT SEEMS STRANGE, THE LESS IRON THERE IS IN IT, THE MORE IT IS ATTRACTED.

THE NIGHTINGALE PERHAPS OWES SOME OF ITS FAME TO ITS SINGING IN THE SILENCE OF NIGHT, WHEN EVERY SOUND IS HEARD TO ADVANTAGE.

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NITRATE OF LIME ABOUNDS IN THE MORTAR OF OLD BUILDINGS, PARTICULARLY THOSE WHICH HAVE BEEN MUCH EXPOSED TO ANIMAL EFFLUVIA.

till, ultimately, the poison subdued their strength, and they died. Buchanan also relates, that the Scots mixed the juice of this plant with the food which they supplied to the Danes, their invaders. It had an intoxicating effect, and the Scots became their destroyers. The deleterious principle of the *belladonna* has been ascertained by Vauquelin to be a bitter, nauseous matter, soluble in spirit of wine, forming an insoluble combination with tannin, and yielding ammonia when burnt.

NI'GHTMARE. [See INCUBUS.]

NI'HIL CA'PIAT PER BRE'VE, in law, the judgment given against the plaintiff in an action either in bar thereof, or in abatement of the writ.——*Nihil dicit*, a failure in the defendant to put in an answer to the plaintiff's declaration, &c. by the day assigned for that purpose, by which omission judgment of course is had against him.——*Nihil debet*, the usual plea in an action of debt: but it is no plea in an action of covenant, in a breach assigned for non-payment of rent, &c.——*Nihil habuit in tenementis*, a plea that can be pleaded only in an action of debt brought by a lessor against a lessee without deed.

NIM'BUS, in antiquity, the circle of luminous rays observed on certain medals, round the heads of emperors and demigods, answering to the *glory* painted round the head of our Saviour, or a saint.——*Nimbus*, is also a word used to express that combination of clouds which condense into rain.

NI'SI PRI'US, in law, a term often given to trials by jury in civil actions. By it is meant a commission directed to the judges of assize, empowering them to try all questions of fact issuing out of the courts of Westminster, that are then ready for trial; and as by the course of the court all causes are heard at Westminster, the clause is added in such writs, *Nisi prius justiciarii domini regis ad assisas capiendas venerint*; that is, Unless before the day fixed the justices come thither to hold assizes—whence the writ, as well as the commission, have received the name.

NITRATES, in chemistry, salts formed of nitric acid with salifiable bases, as the nitrate of potash, soda, &c.

NITRATE OF SIL'VER, in chemistry, is prepared by saturating pure nitric acid with pure silver, evaporating the solution, and crystalizing the nitrate. When swallowed, it is a very powerful poison; but it may be readily counteracted by the administration of a dose of sea-salt, which converts the corrosive nitrate into the inert chloride of silver. Properly prepared, it forms an excellent indelible ink for writing on linen with a pen.

NITRE, or SALT PETRE, a simple salt, crystalized, pellucid, but somewhat whitish, and of an acrid bitterish taste. It is found immersed in imperceptible particles in earthy substances, as the particles of metals in their ores; but sometimes it is gathered native and pure, in the form of an efflorescence, or shapeless salt, either on its ore, or on old walls. The earth from which nitre is obtained, both in Persia and the East Indies, is a kind of marl, found on the bare sides of hills exposed to the northern or eastern winds, and never in any other situation. The people of those countries collect large quantities of this earth, and having a large and deep pit, lined with a hard and tenacious kind of clay, they fill it half full of water, and into this they throw the earth; when this is broken and mouldered to powder, they add more water, and mixing the whole together, suffer it to remain four or five days: after this, they open a hole made in one of the sides of the pit, which lets out all the clear water into a channel of about a foot wide, which is also lined with clay, and through which it runs into another very wide and shallow pit, which is prepared in a level ground, secured by slight walls on all but the north-east side, and open to the sun at the top: here the water evaporates by degrees; and the salt which it had imbibed from the earth crystalizes into small brownish-white, hexahedral, but usually imperfect crystals. Much of the nitre in common use is, however, in suitable situations, which tend to produce nitric acid, particularly where animal matter becomes decomposed by the air, such as slaughter-houses, drains, and the like. Nitre is of great use in the arts and in various manufactures: besides being the basis of gunpowder, it is employed in making white glass, and is of the same use as common salt in preserving meats. It is also of considerable importance in medicine, as a febrifuge, diuretic, and antiphlogistic remedy ——Several interesting phenomena, arising from the crystalization of nitre after fusion, are given by Mr. H. F. Talbot, in the Philosophical Magazine, to which the reader is referred.

NITRIC ACID, a heavy yellow liquid, procured by the chemical combination of oxygen and nitrogen gas. The nitric acid is of considerable importance in the arts. Diluted with the sulphuric and muriatic acids it forms the well known liquid, *aqua-fortis*, which is used for the purpose of etching on copper, &c.; also as a solvent of tin to form with that metal a mordant for some of the finest dyes. It is also of great use in medicine and various chemical processes.

NITROGEN, or AZOTE, in chemistry, the principle of nitre in its gaseous state, which constitutes four-fifths of the volume of atmospheric air, and is remarkable for the properties of extinguishing flame and animal life. [See AZOTE.]——In a paper, read to the Royal Society last year, entitled "An Experimental Inquiry into the Influence of Nitrogen on the Growth of Plants," by R. Rigge, Esq., it was uniformly found that barley and other grains germinated earliest when containing the largest quantity of nitrogen; this quantity being always greatest in the spring, and a powerful agent in the chemical action going on in the growth of the plant. An excess of nitrogen is always found in sap-wood, and largest in

NITRATE OF SULPHUR AND HYPO-SULPHATE OF SODA ARE BOTH BITTER, YET THEY PRODUCE WHEN MIXED THE SWEETEST SUBSTANCE KNOWN.



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those timbers which grow the quickest, and smallest in hard woods: for example; in satin-wood, it is almost inappreciable; so, likewise, in Malabar teak, and in good old English oak, it is very small. It appears also, that nitrogen and residual matter are invariably the most abundant in those parts of plants which perform the most important offices in vegetable physiology; and hence the author is disposed to infer that nitrogen (being the element which more than any other is permanent in its character) when coupled with residual matter, is the moving agent, acting under the living principle of the plant, and moulding into shape the other elements. The method of ultimate analysis adopted by the author, enables him, as he conceives, to detect very minute errors, and therefore to speak with certainty as to the accuracy and value of every experiment.

NI'TRO MURIATIC ACID, in chemistry, a compound of nitric and muriatic acids: the *aqua regia* of the alchemists, which has the property of dissolving gold and platina.

NI'TROUS OXYDE, a gas which, inhaled by respiration, produces a sense of exhilaration and intoxication. It is popularly called *laughing gas*, because it produces a certain degree of pleasurable excitement, often accompanied by laughter, in those who inhale it. It was discovered by Dr. Priestley, in 1772, but was first accurately investigated by Sir H. Davy, in 1779, who describes its effects upon himself as follows:—"Having previously closed my nostrils and exhausted my lungs, I breathed four quarts of nitrous oxyde from and into a silk bag. The first feelings were similar to giddiness; but in less than half a minute, the respiration being continued, they diminished gradually, and were succeeded by a sensation analogous to gentle pressure on all the muscles, attended by a highly pleasurable thrilling, particularly in the chest and the extremities. The objects around me became dazzling, and my hearing more acute. Towards the last inspiration the thrilling increased, and at last an irresistible propensity to action was indulged in. I recollect but indistinctly what followed: I know that my motions were various and violent. These effects very soon ceased after respiration. In ten minutes I had recovered my natural state of mind. The thrilling in the extremities continued longer than the other sensations. Almost every one who has breathed this gas has observed the same things. On some few, indeed, it has no effect whatever, and on others the effects are always painful." To this we may add, that the excitement it occasions is not unfrequently productive of consequences dangerous to life, and therefore the experiment should not be indulged in.—The best mode of procuring it is to expose nitrate of ammonia to the flame of an argand lamp, in a glass retort. When the temperature reaches 400° Fahrenheit, a whitish cloud will begin to project itself into the neck of the retort, accompanied by the copious evolution of gas, which must be collected over mercury for accurate researches, but for common experiments may be received over water.

NIZAM', the title of great officers of state in the Asiatic governments.

NO'BILES, among the Romans, were such as had the *jus imaginum*, or the right of using the pictures or statues of their ancestors; a right which was allowed only to those whose ancestors had borne some curule office, that is, had been curule ædile, censor, prætor, or consul. For a long time, none but the *Patricii* were the *Nobiles*, because no person but of that superior rank could bear any curule office. The Roman nobility, by way of distinction, wore a half moon upon their shoes, especially those of patrician rank.

NOBILITY, in civil institutions, rank conferred by express authority of the governing power. British nobility consists only of five degrees, *viz.* that of a duke, marquis, earl, viscount, and baron [each of which see under their proper articles.] In Britain these titles are only conferred by the sovereign, and that by patent, in virtue of which it becomes hereditary. The privileges of the nobility are very considerable: they are all esteemed hereditary counsellors of the crown, and are privileged from all arrests, unless for treason, felony, breach of the peace, condemnation in parliament, and contempt of the sovereign authority. They enjoy their seats in the house of peers by descent, and no act of parliament can pass without their concurrence: they are the supreme court of judicature, and even in criminal cases give their verdict upon their honour, without being put to their oath.—An hereditary nobility is found in the infancy of most nations, ancient and modern. Its origin is to be attributed to various causes; for the most part to military despotism; in some cases, to the honours paid to superior ability, or to the guardians of the mysteries of religion. The priestly nobility of the remotest antiquity has everywhere yielded to the superiority of military chieftains. In France and Germany, the first hereditary nobility begins with the downfall of the Carlovingian dynasty; in England, with the conquest of the Normans, in the tenth and eleventh centuries; and was afterwards spread over all Europe; for, since that time, dignities, as well as lands, have become hereditary.—A cotemporary writer has remarked, that "it is a curious particular in the history of nobility, that among the natives of Otaheite, rank is not only hereditary, but actually descends to the son, to the degradation of the father while yet alive: thus, he who is a nobleman to-day, if a son be born to him, is a commoner to-morrow, and his son takes his rank."

NO'BLE, in numismatics, a gold coin value 6*s.* 8*d.* which was struck in the reign of Edward III., and stamped with the impression of a ship, which emblem is supposed to have been commemorative of a naval victory obtained by Edward over the French at Sluys, in 1340.

RIVER WAS USED IN THE COMPOSITION OF THE GREEK FIRE, BECAUSE IT KEPT ALIVE THE SULPHUR, RESIN, AND OTHER COMBUSTIBLES.

TO THOSE WHO ARE SUBJECT TO A DETERMINATION OF BLOOD TO THE HEAD, THE INHALING OF "LAUGHING GAS" IS A DANGEROUS EXPERIMENT.



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NORTH AFRICA, THE INTERIOR OF NORTH AND SOUTH AMERICA, AND THE EASTERN PARTS OF ASIA, ARE STILL OCCUPIED BY NOMADES.

THE REPEAL OF THE CORPORATION AND TEST ACTS IN 1828, REMOVED THE CIVIL DISABILITIES UNDER WHICH DISSENTERS WERE FORMERLY PLACED.

NOCTIL'UCA, a species of phosphorus which shines in darkness without the previous aid of solar rays.

NODES, in astronomy, the two points in which the orbit of a planet intersects the ecliptic. These are called the ascending and descending nodes. The line in which the two circles intersect is called "the line of the nodes." This line, as it refers to all the planets, shifts its situation from east to west, contrary to the order of the signs.——*Node*, in surgery, a hard tumour rising out of a bone.——*Node*, in dialling, a point or hole in the gnomon of a dial, by the shadow or light of which is shown either the hour of the day, or the parallels of the sun's declination, &c.

NO'LI ME TAN'GERE, in medicine, a species of herpes affecting the skin and cartilages of the nose, very difficult to cure, because it is retarded by most applications.——In botany, a plant of the genus *Impatiens*.

NO'MADS, or NO'MADES, a name given to nations whose chief occupation consists in feeding their flocks, and who have no fixed place of abode, but shift their residence according to the state of pasture. Nomadic tribes are seldom found to quit their wandering life, until they are compelled to do so by being surrounded by tribes in settled habitations, or unless they can make themselves masters of the settlements of a civilized nation.

NOM DE GUERRE, a French term commonly used to denote an assumed or fictitious name.

NO'MANCY, the art or practice of divining the destiny of persons by the letters which form their names.

NOM'BRIL, in heraldry, the centre of an escutcheon.

NOMENCLA'TOR, in Roman antiquity, was usually a slave who attended upon persons that stood candidates for offices, and prompted or suggested to them the names of all the citizens they met, that they might address them by their names; which, among that people was esteemed an especial act of courtesy.

NO'MENCLATURE, a systematic classification of words, by which they designate the divisions and dependencies of a science.

NOM'INATIVE, in grammar, the first case of nouns that are declinable. The nominative case is the subject of a proposition or affirmation: thus, in the words, "the house is repaired," *house* is the nominative of the noun; but in the words "repair the house," which contain no proposition or affirmation, *house* is used in the accusative case.

NOMOPHY'LACES, in antiquity, Athenian magistrates who were appointed to see the laws executed.

NON (Latin, *not*). This word is used in the English language as a prefix only, for giving a negative sense to words; as in non-ability, non-residence, non-payment, non-appearance, and the like.

NON'AGE, the time of life before a person, according to the laws of his country, becomes of age to manage his own concerns.

NON-ASSUMP'SIT, in law, is a general plea in a personal action, by which a man denies that he has made any promise.—— The following legal terms or phrases, beginning with *non*, properly follow in this place; viz.——*Non compos mentis*, a phrase to denote a person's not being of sound memory and understanding. A distinction is made between an idiot and a person *non compos mentis*, the former being constitutionally destitute of reason, the latter deprived of that with which he was naturally endowed: but, to many purposes, the law makes no distinction between the two.—— *Non distringendo*, a writ granted not to distrain.——*Non est inventus*, that is, literally, "He has not been found:" the answer made by the sheriff in the return of the writ, when the defendant is not to be found in his bailiwick.——*Non liquet*, "it does not appear;" a verdict given by a jury, when a matter is to be deferred to another day of trial.——*Non obstante*, a clause in statutes and letters patent, importing a license from the king to do a thing which at common law might be lawfully done, but being restrained by act of parliament, cannot be done without such license.——*Non pros*, or *Nolle prosequi*, is a term made use of to signify that the plaintiff will proceed no farther in his action. In criminal cases it can only be entered by the attorney-general.

NON-CONDUC'TOR, a substance, or fluid, which does not conduct or transmit another substance or fluid, or which transmits it with difficulty. Thus, glass is a non-conductor of the electric fluid; wool is a non-conductor of heat. [See ELECTRICITY.]

NONCONFORM'IST, one who refuses to conform to the rites and worship of the established church. The name was at first particularly applied to those clergymen who were ejected from their livings by the act of uniformity in 1662. [See DISSENTERS.]

NONES, in the Roman calendar, the fifth day of the months January, February, April, June, August, September, November, and December; and the seventh of March, May, July, and October; these four last months having six days before the nones, and the others only four. March, May, July, and October had six days in their nones; because these alone, in the ancient constitution of the year by Numa, had thirty-one days a-piece, the rest having only twenty-nine, and February thirty: but when Cæsar reformed the year, and made other months contain thirty-one days, he did not allot them six days of nones. The nones, like the calends and ides, were reckoned backwards.

NON-NAT'URALS. Under this term ancient physicians comprehended air, meat and drink, sleep and watching, motion and rest, the retentions and excretions, and the affections of the mind; or, in other words, those principal matters which do not enter into the composition of the body, but at the same time are necessary to its existence.

NON'SUIT, in law, the default, or non-



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IN 1619 BAD THAT FRENCH, OF MALDONADO, IN 1496, PASSED THROUGH A STRAIT BETWEEN ASIA AND AMERICA INTO THE SOUTH SEA.

appearance of the plaintiff in a suit, when called in court, by which the plaintiff is presumed to signify his intention to drop the suit; he is therefore *nonsuited*, that is, his non-appearance is entered on the record, and this entry amounts to a judgment of the court that the plaintiff has dropped the suit.

NON-JURORS, the adherents of James II. who refused to take the oath of allegiance to the government and crown of England at the Revolution, when James abdicated, and the Hanoverian family was introduced.

NOON, mid-day, or twelve o'clock, called *apparent* as shown by a sun-dial, and *real* as shown by a clock.

NORTH POLE, in astronomy, a point in the northern hemisphere of the heavens, ninety degrees every way distant from the equinoctial.——*North Pole Star*, a star in the tail of *Ursa minor*, so called from its not being above two degrees and a half distant from the Pole.

NORTH-WEST PASSAGE. The "North Polar Expeditions" undertaken by the enterprising mariners of England, from the year 1496, when Cabot penetrated into Hudson's bay, had continued to increase in interest with every fresh attempt; till, at length, Parliament offered a premium of 20,000*l.* to the first navigator who should accomplish the north-west passage, and 5000*l.* to the first vessel which should reach the north-pole and pass it. In 1819, the prince regent offered prizes of from 5000*l.* to 15,000*l.* to those vessels which should advance to certain points in the Arctic seas; the British government having the year before fitted out two expeditions to the north pole. Captain Buchan, commanding the Trent and the Dorothy, was instructed to attempt a passage between Spitzbergen and Nova Zembla, over the pole into the Pacific, and captain Ross, commanding the Isabella and the Alexander, to attempt the north-western passage from Davis's straits and Baffin's bay into the Frozen ocean, and thence into the Pacific. Captain Buchan, however, reached only 80° 33′, north of Spitzbergen, where he remained three weeks frozen in; while the chief geographical result of captain Ross's expedition was the more accurate determination of the situation of Baffin's bay; for although he sailed up Lancaster sound, he did not continue his progress far enough to discover that it was open. The British government, therefore, in 1819, sent out lieutenant Parry, who had accompanied captain Ross, on a second voyage into Baffin's bay. He penetrated with his vessels, the Hecla and Griper, through Lancaster sound into Barrow's strait, in which he examined Prince Regent's inlet running in a southern direction, and the polar sea, and wintered in the harbour of an uninhabited island, which he called *Melville island* (74° 45′ lat.) As he had passed (Sept 10) 110° W. long. of Greenwich, he was entitled to the first prize offered by parliament. With eleven companions he explored Melville island, and reached (June 6) the northern coast (75° 24′ 47″ lat. and 110° 36′ 52″ long). They found no inhabitants, but there were some remains of Esquimaux huts, a musk-ox, and rein-deer. August 1, Parry left the winter harbour, where he had remained ten months; but was obliged, after having reached 113° 46′ 43″ long. and 74° 27′ 50″ lat., to return, in consequence of the immense fields of ice, through Davis's straits to Britain, and both vessels entered the harbour of Leith, Oct. 29, 1820. This expedition appeared to give some hope of final success; and on May 8, 1821, captain Parry again sailed, having under his command the Hecla, and accompanied by captain Lyon in the Fury. This expedition, the narrative of which is interesting, did not, however, much advance the object of their voyage. ——While Parry and Ross were seeking for a north-west passage into the Polar sea, captain Franklin was sent by the British government to penetrate to the northern coast of America by land, along Hudson's bay and Coppermine river. Accompanied by Canadians as interpreters, he continued his route through unexplored deserts, but without any satisfactory result; being compelled, through want of provisions, to return to the factory of York, on Hudson's bay, after having travelled altogether 5,550 English miles.—In May, 1824, government fitted out a third polar expedition for the discovery of a north-west passage through Prince Regent's inlet, under Parry and Lyon. The former, with the Hecla and Fury, arrived, July 13, 1824, at Whale island, in Baffin's bay, and proceeded through Barrow's straits, till they arrived, Sept. 27, at Port Bowen, in Prince Regent's bay, where the ships wintered. Storms and icebergs drove the ships ashore, and it became necessary to abandon the shattered Fury.—In 1825, captain Franklin undertook a new journey overland, with the intention of sailing westerly from Mackenzie's river along the coast to Beering's straits, while Dr. Richardson should examine the country, with a view to complete its natural history from the mouth of that river to the Coppermine river. At the same time captain Beechey sailed in the Blossom by the way of Cape Horn, to discover an easterly passage round the icy cape, or in Kotzebue sound. In six months Franklin reached the northern ocean, near Garry's island (69° 30′ lat.), and returned upon the Mackenzie to his winter quarters at Fort Franklin, on Great Bear lake. Both parties left their winter quarters June 21, 1826, and shortly after separated in 67° 38′ lat. and 133° 52′ W. long. Franklin followed down the western arm of the Mackenzie, which runs along the foot of the Rocky mountains. He had thus examined the coast of the Polar sea—a barren wall of rocks, from 113° to 149° 38′ longitude. Floating ice and fogs compelled him to return; but he was fully convinced that a north-west passage was open. The other division, under Richardson and Kendall, explored the coast from the eastern branch of the Mac-

IN 1631 AN EXPEDITION FOR EFFECTING A NORTH-WEST PASSAGE WAS UNDERTAKEN BY JAMES AND FOX, AND ANOTHER BY WOOD IN 1676.



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AN EXPEDITION TO DISCOVER A NORTH-WEST PASSAGE WAS FITTED OUT BY THE HUDSON'S BAY COMPANY IN 1737.

kenzie to the Coppermine river, whose mouth they reached August 8, and returned, after seventy-one days' absence, to fort Franklin, upon the Great Bear lake. Meantime, captain Beechey, in the Blossom, had sailed north from Kotzebue's sound, and had penetrated over 120 miles beyond Icy cape. Here he waited in vain for captain Franklin's arrival in 154 W. long., and in a latitude where the length of a degree is only about twenty miles; but he was obliged to return Oct. 14.——The admiralty now sent captain Parry, in the Hecla, to reach the north pole. He took rein-deer and ice-boats on board at Hammerfast, in Lapland; reached Spitsbergen May 27, 1827; left the Hecla there in the ice; sailed June 21, with two boats, through an open sea; left the boats on the 24th, and began (81° 12′ 51″) his journey over the ice to the north pole. But after thirty-five days' journey over the ice, during which it rained almost all the time, he reached only the latitude of 82° 45′ 15″; and the ice being every where broken, he was obliged to return, after having travelled over 292 miles in a right line, and nearly double that distance if we reckon the necessary windings. The dip of the magnetic needle had constantly been towards the north, and the western variation diminished. It is singular that both captain Parry and captain Franklin arrived in London on the same day, Sept. 29, 1827.—— In the spring of 1829, captain Ross, chiefly through the liberal assistance of Felix Booth, Esq., sheriff of London, undertook a private expedition into the Polar seas, with a view to determine the practicability of a new passage which had been confidently said to exist, particularly by Prince Regent's inlet. This voyage was perilous in the extreme; and no authentic intelligence was received of the expedition, from the 27th of July, 1829, the day it sailed from Wideford, in Greenland, where it had put in to refit, till August, 1833, when the commander and crew were discovered on the south shore of Lancaster sound, by captain Humphreys, of the Isabella, of Hull, the very ship which captain Ross had formerly commanded, and they arrived at Hull on the 18th of October, 1833, after an absence of upwards of four years. Our space will not permit us to narrate many of the events of this perilous and long protracted voyage. Having experienced several almost miraculous escapes from shipwreck, they ultimately succeeded in reaching the 70th degree of latitude, in a direction nearly due south of Fury point, where their course was arrested by an impenetrable barrier of ice. In a harbour which they found at this extreme point they wintered; and in January, 1830, they opened a friendly communication with a tribe of natives, who had never before held intercourse with strangers. Commander Ross (nephew of captain Ross), who was sent to survey the coast of the West sea, leading to cape Turnagain, succeeded in getting within 150 miles of it, and left off within a short distance of where captain Back expected Fish River to join the sea. They also determined that the land was continuous to that which forms Repulse bay. The next winter was one of unparalleled severity—the lowest temperature being 92° below the freezing point. The following summer proving no less rigorous for the season, they were able to retrace their course only fourteen miles; and again, during the winter of 1831, they were doomed to further privations and sufferings. Their provisions being consumed they had now no alternative but to abandon the vessel, and to proceed to the spot where the Fury's provisions still remained—a direct distance of 200 miles, which was increased by one-half, in consequence of the circuitous route which the ice obliged them to take. They accordingly left the Victory in May, 1832, and after a journey of almost unprecedented labour and hardship, they reached Fury beach in July. They then repaired the Fury's boats, and attempted to escape; but it was September before they reached Leopold's island, which they have fully established to be the north-east point of America. Winter set in, and they had no choice but to retrace their steps, and spend another inclement season in their canvas huts covered with snow. Their sufferings at this time, aggravated by want of beds, clothing, and animal food, were of the most acute description: but the spring and summer of 1833 presented more cheering prospects; and they were enabled to return nearly to Lancaster sound, where they were rescued by captain Humphreys, as before stated. Though this expedition, like all the former ones, failed in its principal object, the true position of the magnetic pole was ascertained; the country to which captain Ross gave the name of Boothia, in honour of his patron, was discovered; and much valuable information was obtained for the improvement of geographical and philosophical knowledge. Before news of captain Ross's safety reached this country, subscriptions were raised for fitting out an expedition to go in search of the commander and his gallant crew; and captain Back was appointed to conduct it. He sailed in the spring of 1833; but information of Ross's return reached him in time to prevent him from encountering any inconvenience in his proposed search. He, however, visited the great Fish river, and examined its course to the Polar seas; and, after a perilous arctic land journey, he arrived at Liverpool on the 8th of September, 1835.——Having, in as brief compass as we well could, given a faint outline of the principal attempts which have been made within our memory to discover the "north-west passage," we have the gratification of concluding the article with *an account of its actual accomplishment*. This we offer, without abridgment, as we find it in the columns of the *Literary Gazette*, extracted, as the Editor states, from the *John Bull*:—

"DISCOVERY OF THE NORTH-WEST PASSAGE.—The great geographical problem of the last three centuries has at length been solved, and we are proud to say by Englishmen; and still more proud, perhaps, that it

MIDDLETON'S VOYAGE OCCURRED IN 1741; SMITH AND MOORE'S, 1746; CHRISTOPHER'S, 1761; LORD MULGRAVE'S, 1763.



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has been the result of the ardour and enterprise of a private company, than even if it had been the honourable fruit of a government expedition. The sentiment may be badly expressed, but we are sure that the feeling is right. The triumph of individual energy, in instances like the present, illustrates the national character more fully—'tis the growth of the soil. Our readers will have anticipated that news must have arrived at the Hudson's Bay House from the enterprising and intelligent officers of the company, Messrs. Dease and Simpson, whose Arctic discoveries in 1837 and 1838 have already added so materially to our geographical knowledge. A despatch from those gentlemen was published in a second edition of yesterday's 'Times;' and it is to this source that we are indebted for the following particulars. Messrs. Dease and Simpson descended the Coppermine river on the 22d of June, last year, on their third and happily most successful expedition. On the 18th of the following month they reached Cape Barrow, and had the satisfaction of finding Coronation Gulf partially open; 'whereas,' says the despatch, 'long after the same date, in 1838, the whole party might have crossed it on foot.' They then doubled Cape Alexander amidst very heavy driving ice. 'From Cape Alexander, situate in lat. 68° 56' N., long. 106° 40' W., to another remarkable point in lat. 68° 35' N., long. 98° 10' W., the Arctic coast may be comprised in one spacious bay, stretching as far south as lat. 67° 40', before it turns off abruptly northward to the last-mentioned position. This vast sweep, of which but an inconsiderable portion was seen by Mr. Simpson last year, is indented by an endless succession of minor bays, separated from one another by long narrow projecting points of land enclosing an incalculable number of islands. To reach the last-named point they had to thread a very intricate navigation; but on making it, they suddenly 'opened a strait running in to the southward of east, where the rapid rush of the tide scarcely left a doubt of the existence of an open sea leading to the mouth of Back's Great Fish River. This strait is ten miles wide at either extremity, but contracts to three in the centre. Even that narrow channel is much encroached upon by high shingle islands, but there is deep water in the middle throughout.' Soon after this, that is, on the 12th of August, they were visited by the most terrific thunder storm which they had ever witnessed in these regions; and, on the 16th, the adventurous party 'breakfasted on the identical spot where the tent of our gallant, though less successful precursor (Sir George Back) stood, on his return from Point Ogle to the Great Fish River, that very day five years before.' Here we cannot do better than quote again from the despatch, which proceeds to state:—'The arduous duty we had, in 1836, undertaken to perform, was thus fully accomplished; and the length and difficulty of the route back to the Coppermine would have amply justified our immediate return. We had all suffered more or less from the want of fuel, and the deprivation of warm food, and the prospects grew more cheerless as the cold foul weather stole on apace; *but having already ascertained the separation of Boothia from the American Continent, on the western side of the Great Fish River, we determined not to desist till we had settled its relation thereto on the eastern side also.* A fog which had come on dispersed towards evening, and unfolded a full view of the picturesque shores of the estuary. Far to the southward Victoria headland stood forth, so clearly defined that we instantly recognised it by Sir George Back's exquisite drawing. Cape Beaufort we almost seemed to touch, and with the telescope we were able to discern a continuous line of high land as far round as north-east, about two points more northerly than Cape Hay, the extreme eastern point seen by Sir George Back.' Directing their course to a bold promontory, the farthest land in sight, they there landed, erected a conical pile of ponderous stones, fourteen feet high, placing under it a sealed bottle, containing a sketch of their proceedings, and, amidst a salvo of shot and enthusiastic cheering, took possession of their discoveries 'in the name of Victoria the First.' This bold promontory they named Cape Britannia, and its position is N. lat. 68° 56' 3", W. long. 94° 35; the coast trended away from this north-east, and they ran along it forty-three miles further, to the mouth of a small river, the position of which they determined to be N. lat. 68° 28' 27" W. long. 97° 3'; this was the term of their voyage. 'From a limestone ridge, about a league inland from the mouth of this river,' says the despatch, 'we obtained a view of some very remote blue land in the north-east quarter, in all probability one of the southern promontories of Boothia. Two considerable islands lay far in the offing, and others high and distant, stretched from E. to E.N.E. Our view of the low main shore was confined to five miles in an easterly direction, after which it appeared to turn off greatly to the right. We could, therefore, scarcely doubt our having arrived at that large gulf uniformly described by the Esquimaux as containing many islands, and with numerous indentations stretching down to the southward till it approaches within forty miles of Repulse and Wager bays. The exploration of such a gulf, which was the main object of the Terror's ill-starred voyage, would necessarily demand the whole time and energies of another expedition, having a starting or retreating point much nearer to the scene of operations than Great Bear Lake; and it was quite evident to us that any further foolhardy perseverance could only lead to the loss of the great object already attained, together with that of the whole party.' The voyagers therefore wisely determined to return; and they began to retrace their steps on the same day, the 20th of August. Our space will not allow us to accompany them in their voyage homeward, during

A NORTH-WEST PASSAGE WAS ATTEMPTED BY HEARNE IN 1776; ANOTHER BY YOUNG, IN 1777; AND AGAIN BY COOK, IN 1778.

ACCORDING TO HISTORICAL ACCOUNTS, THE POLAR SEA ON THE EASTERN COAST OF OLD GREENLAND HAD BEEN UNAPPROACHABLE FOR FOUR CENTURIES.



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which we regret to find the party suffered extremely from the excessive cold. Their course home took them through the Great Bear Lake, and down the Mackenzie, and they finally reached Fort Simpson on the 14th of October, having been nearly four months engaged in an expedition, the difficulties, perils, and sufferings of which, nothing but an Arctic voyage we presume can give the imagination any idea of. Although hard pressed for space, we must quote the concluding passage of the despatch, as it shows the indomitable spirit of the men: 'We rejoice in having anticipated the Russian expedition, and secured to our country and the company the indisputable honour of discovering the north-west passage, which has been an object of search to all maritime nations for three centuries. When our expedition was planned at Norway House, in 1836, it was confidently expected that Sir George Back would have achieved the survey of the Gulf of Boothia with the Vernon boats, and that our meeting at the mouth of the Great Fish River would have left no blank in the geography of Northern America. That officer's failure, the exhaustion of our men and means, and the necessity of a new wintering ground, render a fresh expedition indispensable for the examination of the gulf of Boothia, the circuit of which to the Strait of the Fury and Hecla, according to the Esquimaux accounts, cannot be less than 400 or 500 miles, it only remains for us to recommend to your approbation the plan proposed by Mr. Simpson to perfect this interesting service, which, as he had no wish to avail himself of the leave of absence granted, he is prepared to follow up whenever the limited means required are placed at his disposal.'

NOTES, in music, characters which mark pitch and the time of a sound, and the swiftness and slowness of its motions. In general, under *notes* are comprehended all the signs or characters used in music, though in propriety the word only implies the marks which denote the degrees of gravity and acuteness to be given to each sound. [See MUSIC.]

NOUN, in grammar, a word that denotes any object of which we speak, whether that object be animate, inanimate, or ideal; as *man, gate, mind.* Nouns form the basis of all language: thus, we call a certain instrument, a *saw;* the act of using that instrument, *sawing;* and thence obtain the verb, to *saw.*

NOVAC'ULITE, in mineralogy, the *hone,* or *Turkey-oil-stone,* a variety of argillaceous slate. It owes its power of whetting or sharpening steel instruments to the fine siliceous particles it contains. Various other stones are used as whetstones, such as mica slate, freestone, &c.

NOV'EL, in literature, a fictitious tale, or imaginary history of real life, generally intended to exhibit the operation of the passions, foremost among which is love. "In the novel," says Goethe, "sentiments and events are to be chiefly represented; in the drama, character and actions. The hero of the novel must be passive, or, at least, not in a high degree active; but we expect of the dramatic hero action." Historical novels, excellent as many of them undoubtedly are, blend facts so incongruously with fiction, that they create erroneous ideas in the minds of those readers who shrink from toilsome research; and though they may convey a tolerably faithful picture of past manners, the high-wrought incidents with which they are filled make a sad jumble when associated with the matter-of-fact events described by the sober historian.——*Novel,* in civil law, a term used for the constitutions of several emperors, as those of Justin, Tiberius, Leo, and more particularly of those of Justinian. The constitutions of Justinian were called novels, either from their producing a great alteration in the face of the ancient law, or because they were made on new cases, and, after the revisal of the ancient code, compiled by order of that emperor.

NOVEM'BER, the eleventh month of the Julian year, consisting only of thirty days. It is the first winter month in the northern hemisphere, and the first summer month of the southern. Its name, November, originates in its being the ninth month of the Roman reckoning.

NOV'ICE, a person not yet skilled or experienced in an art or profession. *Novice* is more particularly used in monasteries for a religious person, in his or her novitiate, or year of probation, and who has not made the vows.

NOVI'TIATE, the term appointed for the trial of those who are to enter a monastery, in order to ascertain whether they have the qualifications necessary for living up to the rule to which they are to bind themselves by vow. The novitiate is generally very severe; the novice generally having to perform many menial offices about the convent, and to give account of the most trifling actions to the master of the novices.

NU'CLEUS, properly, the kernel of a nut, or of any seed inclosed within a husk. In astronomy, the term *nucleus* is used for the body of a comet, otherwise called its head.——In ancient architecture, *nucleus* signified the middle flooring, which consisted of a strong cement, over which they laid the pavement.

NUDE COM'PACT *(nudum pactum),* in law, a contract made without any consideration, and therefore not valid.——*Nude matter,* a bare allegation of something done.

NUDIPEDA'LIA, in antiquity, a festival in which all were obliged to walk barefooted. This was done on account of some public calamity; as the plague, a famine, &c. &c. It was likewise usual for the Roman matrons, when any supplication and vows were to be made to the goddess Vesta, to walk in procession to her temple barefooted.

NU'DITIES, in painting and sculpture, those parts of the human figure which are not covered with drapery. The appearance



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of the covering being determined by the structure of the frame, it is essential to the painter, as well as the sculptor, to study the naked figure with the greatest attention.

NUM'BER, in arithmetic, an assemblage of several units or of several things of the same kind. *Cardinal* numbers express the number of things, as 1, 2, 3, 4. *Ordinal* numbers denote the order of things, as 1st, 2d, 3d, &c. *Even* numbers are those which may be divided into two equal parts, without a fraction, as 6, 12, &c. *Uneven* numbers are such as leave a remainder after being divided, as 5, 13, &c. A *square* number is the product of any number multiplied by itself, as 4, the product of 2 multiplied by 2. A *rational* number, is one commensurable with unity. A number incommensurable with unity is termed *irrational* or *surd*. A *cubic* number is the product of a square number by its root: such is 27, as being the product of the square number 9, by its root 3. A *perfect* number is that whose aliquot parts added together make the whole number, as 6, 28; the aliquot parts of six being 3, 2, and 1—6; and those of 28, being 14, 7, 4, 2, 1—28. *Imperfect* numbers, those whose aliquot parts added together, make either more or less than the whole. *Homogeneal* numbers, are those referred to the same units; those referred to different units are termed *heterogeneal*.

NUM'BERS, the title of the fourth book of the Pentateuch, so called because it contains an account of the numbering of the people. The book comprehends a period of the Israelitish history of about thirty-eight years.——*Numbers*, in poetry, oratory, music, &c. are certain measures, or cadences, which render a verse, period, or song, agreeable to the ear. *Poetical numbers* consist in a certain harmony in the order and quantity of syllables constituting feet. *Rhetorical numbers* are a sort of simple unaffected harmony, less apparent than that of verse, but such as is perceived and affects the mind with pleasure.

NU'MERAL LETTERS, the Roman capital letters which stand as substitutes for figures; as I for 1; X for 10; L for 50; C for 100, &c.

NUMERATION, the art of expressing in figures any number proposed in words, or expressing in words any number proposed in figures. Thus for one thousand, we write 1000, &c.

NU'MERATOR, in arithmetic, the number in the upper line of a fraction, denoting the number of the given parts taken, as 3 in ¾, that is three out of the four parts of an integer.

NUMISMATICS, or NUMISMATO'LOGY, the name of the science which has for its object the study of coins and medals of all nations, as means of history and rectification of dates in chronology. The earliest coins are Phœnician, and were struck or imprinted from dies unreversed, so that the inscription was reversed; but those struck by the ancient Greeks and Romans are most deserving our attention. The study of coins and medals is indispensable to archeology, and to a thorough acquaintance with the fine arts. They indicate the names of provinces and cities, determine their position, and present pictures of many celebrated places. They fix the period of events, sometimes determine their character, and enable us to trace the series of kings; they also give us the attributes and titles of different divinities, the utensils and ceremonies of their worship, and the costume of the priests—in fine, every thing which relates to usages, civil, military, and religious—while they enable us to trace the epochs of different styles of art, and are of great assistance in our philological researches. [See MEDALS.]

NUM'MULITE, the fossil remains of a chambered shell of a flattened form, formerly mistaken for money.

NUN'CIO, a person sent by the pope on foreign missions which concern ecclesiastical affairs.

NUN'CUPATIVE WILL, in law, a will or testamentary desire expressed verbally, but not put into writing. It depends merely on oral testimony for proof, though afterwards reduced to writing. Nuncupative, in a general sense, signifies something that exists only in name.

NUN'DINÆ, in antiquity, days set apart by the Romans for the country people to expose their wares and commodities to sale, very similar to our large markets or fairs. They were called *Nundinæ*, because they were kept every ninth day.

NUN'NERY, in the Romish church, a religious house for nuns, or females who have bound themselves by vow to a single life.

NUR'SERY, in gardening, is a piece of land set apart for raising and propagating all sorts of trees and plants, to supply the garden and other plantations.

NUTMEG, the kernel of a fruit belonging to a species of *Myristica*, growing in the isles of the East Indies and the South Sea. The fruit is of the kind called a *drupe*, that is, a pulpy pericarp without valves, containing a nut or kernel. It is generally separated from its outward coat, the mace, before it is shipped, but the whole fruit is occasionally imported in a preserved state, as a sweetmeat.

NUTATION, in astronomy, a tremulous motion of the earth's axis, by which in its annual revolution it is twice inclined to the ecliptic, and as often returns to its former position.

NUT'GALLS, excrescences on the leaf of the oak. The Aleppo galls are imported for the use of dyers, calico printers, &c.

NUTRITION, in the animal economy, is the identification and assimilation of nutritive matter to our organs, or the repairing the continual loss which the different parts of the body undergo. The motion of the parts of the body, the friction of these parts with each other, and especially the action of the air, would destroy the body entirely, if the loss was not repaired by a proper diet, containing nutritive juices;



THE NUTMEG-TREE YIELDS THREE CROPS ANNUALLY; ONE IN APRIL, WHICH IS THE BEST; ONE IN AUGUST; AND ONE IN SEPTEMBER.

NUTMEGS ARE FREQUENTLY PUNCTURED AND BOILED, TO OBTAIN THE ESSENTIAL OIL: BUT THIS FRAUD IS EASILY DETECTED BY THEIR LIGHTNESS.

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NUX VOMICA IS A VERY VIRULENT POISON; ITS INTRODUCTION INTO BREWERIES IS THEREFORE PROHIBITED UNDER HEAVY PENALTIES.

which being digested into the stomach, and afterwards converted into chyle, mix with the blood, and are distributed through the whole body for its nutrition. In proportion as our parts are destroyed, they are renewed by homogeneous particles, or such as are exactly similar to themselves; otherwise their nature, which is always alike, would suffer continual changes. When the nutritive matter has been animalized, or assimilated to the body which it is designed to nourish, by the organs of digestion, absorption, circulation, respiration, and secretion, the parts which it supplies retain and incorporate it with their own substance. This nutritive identification is variously effected in different parts, as the brain, muscles, bones, &c.; each of these appropriates to itself, by a true secretion, that which is found analogous to its nature, and rejects the heterogeneous particles. A bone is a secretory organ that becomes encrusted with phosphate of lime; the lymphatic vessels, which in the work of nutrition perform the office of excretory ducts, remove this salt after it has remained a certain time in the areolæ of its texture. It is the same in muscles with respect to the fibrin; and in the brain with albumen: each part imbibes, and renders solid in its structure, such juices as are of the same nature, in consequence of a power, of which the affinity of aggregation of the chemists gives us an idea, and perhaps furnishes us with an exact model. Every living body, without exception, seems to possess a faculty of forming and decomposing substances, by the assistance of which it is supported, and of giving rise to new products. Thus the animal machine is continually destroyed, and at distant periods of life does not, perhaps, contain a single particle of the same constituent parts.

NUX VOMI'CA, in botany, an East Indian tree, and its fruit, which is globular, about the size of an orange, and contains several seeds. These seeds are a certain poison for cats, dogs, &c., and is confidently said to be one of the ingredients unlawfully infused into beer, to give it a stupifying quality.

NYCHTHEME'RON, among the ancients, signified the whole natural day, or day and night, consisting of twenty-four hours, or equal parts. This way of considering the day was particularly adopted by the Jews, and seems to owe its origin to that expression of Moses, in the first chapter of Genesis, "the evening and the morning were the first day."

NYCTALO'PIA, in medicine, a defect of vision, by which, through weakness, the patient can discern objects only in obscure places, or by the dull light of evening. This is a constitutional defect, not to be cured. Anatomists attribute it to the want of a constituent part of the animal substance, called the *rete mucosum*, which gives colour to the complexion, hair, and eyes.

NYL'GHAU, in zoology, an animal brought from the East Indies, bearing considerable resemblance to both the bovine and deer species. Its body, horns, and tail are not unlike those of a bull; and the head, neck, and legs are very like those of a deer. The colour in general is ash or gray. Its horns are about seven inches long, and of a triangular shape. It eats oats, is fond of grass, hay, and wheat bread. The female is much smaller than the male, more resembles the deer, and has no horns.

NYMPH'A, or NYMPH, in entomology, the second state of an insect passing to its perfect form; another name for the *pupa*, *chrysalis*, or *aurelia*.

NYMPHÆ'A, certain public baths at Rome, of which there were twelve in number, adorned with curious statues of the Nymphs, to whom they were consecrated, furnished with pleasant grottoes, and supplied with cooling fountains, which rendered them exceedingly delightful, and drew great numbers to frequent them. Silence was particularly required there, as appears by this inscription, *Nymphis loci, bibe, lava, tace.*

NYMPHÆ'A, in botany, the Water Lily, a genus of plants in the Linnæan system, class 13 *Polyandria*, order 1 *Monogynia*. The species are perennials.

NYMPHÆ'A LOTUS, in botany, the Egyptian lotus; an aquatic plant, a native of both Indies. The root is conical, firm, about the size of a midding pear, covered with a blackish bark, and set round with fibres. It has a sweetish taste, and, when boiled or roasted, becomes as yellow within as the yolk of an egg. The plant grows in abundance on the banks of the Nile, and is there much sought after by the poor, who in a short time collect enough to supply their families with food for several days.

NYMPHS, local goddesses, as Nereids in the sea; Naiads of the fountains; Dryads of the woods, &c. &c.

NYSTAG'MUS, in medicine, a twinkling of the eyes, such as happens when a person is very sleepy. It is known by the instability or involuntary and constant motions of the globe of the eye, from one canthus to another, or in some other directions. Sometimes it is accompanied with a hippus, or an alternate and repeated dilatation and constriction of the pupil; and, as there are several species of nystagmus, it is evident it arises from various causes.

THE NYMPHS HELD A MIDDLE STATION BETWEEN GODS AND MORTALS; AND, THOUGH NOT IMMORTAL, WERE REMARKABLE FOR LONGEVITY.

# O.

O, the fourth vowel and the fifteenth letter in the alphabet, is pronounced by projecting the lips, and forming an opening resembling the letter itself. The English language designates not less than four sounds by the character *o*, exemplified in the words *no, prove, for, not*. The French indicate the sound *o* (pronounced as in *no*) by various signs. The use of *o* is next in frequency to that of *a*: it is used particularly to express admiration, warning, pity, imploring; and, in general, as introductory to language expressive of great emotion, as *O!* or *Oh!* With an apostrophe after it, *O* signifies *son* in Irish proper names; as O'Neil (the *son of Neil*), like the prefix *Mac*.

OAK *(quercus)* in botany, a tree ranking among the most useful of the productions of temperate climates. More than eighty species are known; but the common European oak *(quercus robur)* is a tree of the first consequence on account of the qualities of its wood. It attains the height of from 60 to 100 feet, with a trunk from 6 to 12, or more, in circumference. From the solidity and durability of the wood, it is employed for a vast variety of purposes, and, above all, for ship-building. The British oak surpasses all other kinds; and to it this country is indebted for its boasted "wooden walls." Before the introduction of mahogany, it was very generally used for furniture; and it is also the best wood for fuel. Evelyn mentions an oak cut down in Donnington Park, near Newbury, once the residence of Chaucer, which ran fifty feet clear without a knot, and cut clean timber five feet square at the base. The "lady oak," mentioned by Sir E. Harley, produced a butt of forty feet, and squared five feet throughout its whole length, thus producing twenty tons of timber. In 1810 an oak tree, which grew about four miles from Newport in Monmouthshire, was felled for the use of the royal navy, which contained 2416 cubic feet of sound and convertible timber. The main trunk was nine feet and a half in diameter. The tree was purchased, standing, for 40*l*., and when brought to market, it produced nearly 600*l*. But the most magnificent oak ever known to grow in England, was probably that dug out of Hatfield bog: it was 120 feet in length, twelve in diameter at the base, ten in the middle, and six at the smaller end where broken off; so that the butt for sixty feet squared seven feet of timber, and four its entire length. In the New Forest, Evelyn counted, in the sections of some trees, three hundred or four hundred concentric rings of wood, each of which recorded a year's growth. Gilpin, in his charming "Forest Scenery," notices "a few venerable oaks in the New Forest, that chronicle upon their furrowed trunks, ages before the Conquest." The growth of the common oak in general is extremely slow. The *acorn* is the fruit of this tree, and, though now used as the food of swine, in ancient times it formed an important article of nutriment to some of the northern nations, and, among others, to the rude inhabitants of the British isles. The oak is raised from acorns, sown either where the tree is to stand, or in a nursery whence the young trees are transplanted. A fine grown oak conveys to the mind associations of strength and duration, which are very impressive; nay, Vitruvius has said, that when driven into the earth it is of eternal duration. It should, however, be observed, that there are two distinct species of oak in England—the *Quercus robur* and the *Quercus sessiflora*; the former of which affords a close-grained, firm, solid timber, rarely subject to rot; the other more loose and sappy, very liable to rot, and not half so durable. This difference was noticed so early as the time of Ray; and Martyn in his "Flora Rustica," and Sir James Smith in his "Flora Britannica," have added their testimonies to the fact. To the introduction of this second species of oak in our naval dock-yards, is to be attributed the prevalence of the dry rot, which of late years has been so destructive to the British navy.——*Oak-bark* is used in tanning. In medicine, the bark is a strong astringent, and is therefore recommended in hæmorrhages. Some have supposed that it would answer every purpose of Peruvian bark; but this idea others, after trial, have discountenanced. Both the bark and the leaves are employed in hot-beds; and the leaves are now reckoned better for this use than the bark.

OAK'-GALLS, protuberances on the leaves of the oak, formed and inhabited by insects. They appear in April, and remain till June or longer. When opened, they are found to contain one insect only. "It might appear that the parent fly, when she had formed a gall for the habitation of her worm offspring, had placed it in an impregnable fortress; but this is not the case: for it frequently happens that a fly which produces a worm of the carnivorous kind, pierces the sides of the gall and deposits her egg within it. The worm, when hatched, feeds upon the proper inhabitant; and finally, after devouring it, passes, itself, into the chrysalis state, and thence appears in the form of its parent-fly, and is seen making its way out of the gall."

OAK'UM, old ropes untwisted, and pulled out into loose hemp; used in caulking the seams, tree-nails, and bends of a ship, for stopping or preventing leaks. That formed from untarred ropes is called white oakum.

OAR, a long piece of timber, flat at one

A STANDING TREE IS MEASURED BY SQUARING ONE-FOURTH OF THE GIRTH, AND MULTIPLYING IT BY THE HEIGHT OF THE TRUNK.

OAK TIMBER SHOULD BE FELLED EARLY IN THE WINTER, FOR IF THE SAP IS ASCENDING, THE TIMBER WILL BE LESS DURABLE.



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GREAT QUANTITIES OF OATS ARE GROWN IN THE FENS OF LINCOLN, HUNTINGDON, CAMBRIDGE, &c., AS WELL AS IN THE MORE NORTHERN COUNTIES.

end and round at the other, used to propel a boat or barge on the water. The flat part is called the *blade*, and the round end the *handle*. To push the boat or vessel forwards by means of this instrument, the rowers turn their backs forwards, and dipping the blade of the oar in the water, pull the handle forward, which, striking the water, necessarily impels the vessel according to the force and skill with which the action is performed.

OA'SIS, a fertile spot, situated in the midst of the uninhabitable deserts of northern Africa: the name is also applied to a cluster of verdant spots. In the desert of Sahara there are several of these, which serve as halting-places for the caravans. There are also some considerable towns so named, which are described in the travels of Belsoni, Edmondstone, Browne, and others.

OAT, in botany, a plant of the genus *Avena*. From the back of the corolla, there grows a single, crooked, and contorted arista, or awn: the corolla serves as a pericarp, surrounding a single seed, which is of an oblong figure, very sharp-pointed at each end, and with a longitudinal furrow. When the seed or grain only is intended to be spoken of, the word is commonly used in the plural, *oats*. The meal of this grain, *oatmeal*, forms a considerable article of food for man in some countries; and in all parts oats are excellent food for horses and cattle. It is the hardiest of all the cereal grasses growing luxuriantly in cold northern climates, and in coarse mountainous districts, where neither wheat nor barley can be advantageously cultivated. In Scotland, where it has long formed a principal part of the food of the people, and in Ireland, great quantities are grown.—The original country of the oat, that is, the place in which it grows without cultivation, is fixed by Mr. Bruce, in Aroosai, a small territory near the source of the Nile: "Wild oats," says this traveller, "grow up here, spontaneously, to a prodigious height and size, capable often of concealing both the horse and his rider, and some of the stalks being little less than an inch in circumference. They have, when ripe, the appearance of small canes. The inhabitants make no sort of use of this grain in any period of its growth. The uppermost thin husk of it is beautifully variegated with a coangeable purple colour: the taste is perfectly good."

——*Transformation of oats into rye.* It is asserted that this transformation will take place if the oats be sown very late (about Midsummer-day), and cut *twice* as green fodder before shooting into flower stalks; whereupon a considerable number of the oat plants do not die in the course of the winter, but are changed in the following spring into rye, forming stalks which cannot be known from those of the finest winter rye.

OATH, is a solemn affirmation made in the presence of a magistrate or other person rendered competent by the law to administer it, in which the person sworn invokes the Almighty to witness that his testimony is true. A person who is to be a witness in a cause may have two oaths administered to him; the one to speak the truth, in relation to what the court shall think fit to ask him, concerning himself or any thing else that is not evidence in the cause; and the other purely to give evidence in the cause wherein he is produced as a witness; the former of which is called an oath upon a *voyer dire*. By statute, all who hold offices of any kind under the government, members of the house of commons, ecclesiastical persons, members of colleges, school-masters, serjeants-at-law, counsellors, attorneys, advocates, proctors, &c., are required to take the oaths of allegiance, &c. The laws of all civilised states have required the security of an oath for evidence given in a court of justice; and the Christian religion, while it utterly prohibits profane and needless swearing, does not seem to forbid oaths duly required, or taken on necessary occasions. But the Quakers and Moravians,—swayed by the sense which they put upon that text of Scripture in St. Matthew which says, "Swear not at all," and St. James's words, ch. v. 12.,—refuse to swear upon any occasion, even at the requisition of a magistrate, and in a court of justice. These scruples appear to proceed from not distinguishing between the proper use and the abuse of swearing. It is doubtless impious to call upon God to witness trifles, or to use his holy name as a mere expletive in conversation; but it does not follow that we may not call upon him to witness truths of importance. If it be lawful to ask of God our daily bread, and other earthly blessings, it cannot surely be unlawful, where the lives or properties of our neighbours, or the security of government is concerned, to invoke him with reverence to witness the truth of our assertions, or the sincerity of our intentions; because of our truth and sincerity, in doubtful cases, none but he can be the witness. —— Oaths to perform illegal acts do not bind, nor do they excuse the performance of the act. Perjury is the wilful violation of an oath administered by a lawful authority to a witness in a judicial proceeding.—Different formalities have been customary in different countries in taking oaths. The Jews sometimes swore with their hands lifted up, and sometimes placed under the thigh of the person to whom they swore. This was also the custom among the Athenians and the Romans. The ancients guarded against perjury very religiously; and for fear they might fall into it through neglect of due form, they usually declared that they bound themselves only so far as the oath was practicable; and lest the obligation should lie upon their ghosts, they made an express obligation, when they swore, that the oath should be cancelled at their death. Perjury they believed could not pass unpunished, and expected the divine vengeance to overtake the perjured villain even in this life.

OBADI'AH, or *the prophecy of Obadiah*

THE FREQUENT USE OF THAT SOLEMN INVOCATION "SO HELP ME GOD!" IS CALCULATED TO TAKE FROM THE SACREDNESS OF THE OBLIGATION IT IMPOSES.



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a canonical book of the Old Testament, which is contained in one single chapter, and is partly an invective against the cruelty of the Edomites, and partly a prediction of the deliverance of Israel, and of the victory and triumph of the whole church over her enemies.

OBCOR'DATE, in botany, shaped like a heart, with the apex downward; as, an *obcordate* petal or legume.

O'BEAH, a species of witchcraft practised among the Negroes, the apprehension of which operating upon their superstitious fears, is frequently attended with disease and death.

OB'ELISK, in architecture, a high quadrangular pillar, diminishing as it ascends, and terminating in a small pyramid. Obelisks are of Egyptian origin; and, according to Herodotus, they were first erected in honour of the sun. One of their uses was to find the meridian altitudes of the sun at different times of the year, serving instead of very large gnomons. Augustus erected an obelisk at Rome, in the Campus Martius, which marked the hours on a horizontal dial drawn on the pavement. Diodorus makes mention of two obelisks of Sesostris placed before a Theban temple, which were 120 cubits high. Herodotus mentions two others, 100 cubits high, one of which was erected before a temple at Sais, and the other before the temple of the sun at Heliopolis. In the plenitude of their power the Romans removed many of these relics, of times then ancient, from their original situations into Italy, and erected others. One of the obelisks now standing at Rome, viz. that of St. John of Lateran, is 140 feet in height, exclusive of the pedestal, and 179 feet with it.——In printing, an *obelisk*, thus †, is used as a reference to a note in the margin or at the foot of the page.

OB'JECT-GLASS, in optics, the glass of a telescope or microscope next the object, the purpose of which is to make a picture of the object, with the rays of light so diverging that the picture may be viewed by another glass, which fits them for distinct vision.

OBJECTIVE CASE, in some grammars, is used for the accusative case. The objective or accusative case is that in which the noun is the object to which the action refers; as, "I reminded the master," in which *master* is used in the accusative or objective case.——*Objective line*, in perspective, the line of an object, the representation of which is sought for in the draught or picture.——*Objective plane*, any plane situated in the horizontal plane, the perspective representation of which is required.

O'BIT, a funeral solemnity, or office for the dead, most commonly performed when the corpse lies in the church uninterred. It likewise signifies an annual commemoration of the dead, performed on the day of their death, with prayers, alms, &c. In religious houses they have a register, in which they enter the *obits* of their founders and benefactors, which was thence termed the *obituary*.

OBLA'TA, in law, things offered in the exchequer, or old debts brought from foregoing years, and put to the account of the present sheriff.

OBLATE, in geometry, an epithet for any figure that is flattened or shortened, as an *oblate spheroid*, having its axis shorter than its middle diameter, being formed by the rotation of an ellipse about the shorter axis. The earth is an oblate spheroid, the polar diameter being shorter than the equatorial diameter in the proportion of 331 to 332.

OBLATI, in church-history, secular persons who devoted themselves and their estates to some monastery, into which they were admitted as a kind of lay-brothers. The form of their admission was putting the bell-ropes of the church round their necks as a mark of servitude. They wore a religious habit, different from that of the monks.

OBLATION, a sacrifice, or offering made to God. In the canon-law, oblations are defined to be anything offered by godly Christians to God and the church, whether movables or immovables. Till the fourth century, the church had no fixed revenues, the clergy wholly subsisting on voluntary oblations.

OBLIGATION, in general, denotes any act whereby a person becomes bound to another to do something. Obligations are of three kinds, viz. natural, civil, and mixed. Natural obligations are entirely founded on natural equity; civil obligations, on civil authority alone, without any foundation in natural equity; and mixed obligations are those which being founded on natural equity, are further enforced by civil authority.——In a legal sense, *obligation* signifies a bond, wherein is contained a penalty, with a condition annexed for the payment of money, &c.

OBLIGA'TO (Italian, *required*), in music, a term used of those voices or instruments which are indispensable to the just performance of a piece.

OBLI'QUE, deviating from a perpendicular line or direction, as an oblique angle, &c. that which is not a right one.——*Oblique planes*, in dialling, are those which decline from the zenith, or incline towards the horizon.——*Oblique sailing*, is when a ship sails upon some rhomb between the four cardinal points, making an oblique angle with the meridian.——*Oblique ascension* and *descension*, in astronomy, those points of the equinoctial which rise and set with the sun, or any other point of the heavens in an oblique sphere.

OBLIQUITY, deviation from a right line; neither parallel nor perpendicular: generally applied to the ecliptic, which deviates from the plane of the earth's equator, 23°, 27'.

OB'OLUS, a small Grecian silver coin, equal to one penny farthing. It was this coin which they placed in the mouth of the dead, to pay Charon for their passage over the Styx.

OBO'VATE, in botany, a term for a leaf the narrow end of which is downward.

AN OBELISK, 66 FEET HIGH, WAS BROUGHT FROM LUXOR, A VILLAGE NEAR THEBES, IN EGYPT, AND SET UP IN THE PLACE LOUIS XV. IN PARIS, 1836.

THE FIRST OBELISK MENTIONED IN HISTORY WAS THAT OF RAMESES, KING OF EGYPT, IN THE TIME OF THE TROJAN WAR, 40 CUBITS HIGH.



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THE FIRST OBSERVATORY ERECTED IN EUROPE WAS AT CASSEL, IN 1561, UNDER THE SUPERINTENDANCE OF THE CELEBRATED TYCHO BRAHE.

AN OBSERVATORY ON A MOST SPLENDID SCALE HAS BEEN ERECTED, WITHIN A VERY RECENT PERIOD, IN THE UNIVERSITY OF CAMBRIDGE.

OBSECRA'TIO, in Roman antiquity, a solemn ceremony performed by the chief magistrates of Rome, to avert any impending calamity. It consisted of prayers offered up to the gods whom they supposed to be enraged. So exact were they in observing the prescribed form on these occasions, that a person was appointed to read it over to the man who was to pronounce it, and the most trifling omission was held sufficient to vitiate the whole solemnity.

OBSECRA'TION, in rhetoric, a figure in which the orator implores the assistance of God or man.

OBSERVA'TORY, a building constructed in some lofty situation, and fitted up with telescopes, quadrants, &c. for the purpose of making astronomical observations. We find mention of observatories at a very early period: some of them existed in Chaldæa, ancient Persia, India, and China; and the most celebrated modern ones are those at Greenwich, Paris, Munich, and Palermo. Their accuracy is such, that astronomers and navigators are enabled to calculate to the 3600th part of a minute of time, and the 216,000th part of a degree; all such calculations depending on patient observation, and not on any theory or system The Greenwich observatory was built in 1676, by order of Charles II. at the instance of Sir Jonas Moore and Sir Christopher Wren; the former being surveyor-general of the ordnance: a circumstance from which the office of astronomer-royal has been placed under that department. The person to whom the province of observing was first committed, was Mr. John Flamsteed; a man who, as Dr. Halley expresses it, seemed born for the employment. In the year 1690, having provided himself with a mural arch, of seven feet diameter, well fixed in the plane of the meridian, he began to verify his catalogue of fixed stars, which hitherto had depended altogether on the distances measured with the sextant, after a new and very different manner, viz. by taking the meridional altitudes, and the moments of culmination, or, in other words, the right ascension and declination. In the space of upwards of forty years this astronomer collected an immense number of observations, which may be consulted in his Historia Cœlestis Britannica, published in 1725; the principal part of which is the Britannic catalogue of fixed stars. This observatory is situated on the highest eminence of Greenwich park, about 160 feet above low water mark. The observations made here are not only allowed to possess unrivalled accuracy, but have been the foundation of the most important work on practical astronomy ever published, viz. the Nautical Almanac, which Dr. Maskelyne commenced in 1767. There are many other observatories in the United Kingdom, both public and private. It is not our intention, however, to lengthen this article by enumerating them; though, perhaps, we ought to mention the one erected by Dr. Herschel, at Slough, where his far-famed forty-feet telescope (lately removed) for so many years attracted public attention.

OBSIDIAN, in mineralogy, a black, glassy-looking substance, with a large conchoidal fracture. It melts before the blow-pipe into a white enamel.

OBSIDIONA'LIS, CORO'NA, a crown or garland made of grass, and given by the Romans to such generals as had delivered a Roman army or fortress besieged by the enemy.

OB'TURATORS, in anatomy, two muscles of the thigh, one of which is called *obturator internus*, and the other *obturator externus*. These muscles shut up the foramen or aperture between the os pubis and the hip-bone, and are rotators of the thigh.

OC'CIDENT, in astronomy, that part of the horizon where the sun descends into the lower hemisphere, in contradistinction to *orient*. Hence we use the word *occidental* for anything belonging to the west.

OCCIPI'TAL, in anatomy, a term applied to the parts of the *occiput*, or back part of the skull.

OC'CIPUT, in anatomy, *occipitis os*, *os memoriæ*, or *os nervorum*, the name given to that bone which forms the posterior and inferior part of the skull. It is of an irregular figure, convex on the outside, and concave internally. This bone is thicker and stronger than any other of the bones of the head, except the petrous parts of the ossa temporum. The reason for this seems to be that it covers the cerebellum, in which any wound is of the utmost consequence, and that it is, by its situation, more liable to be fractured by falls than any other bone of the cranium.

OCCULT', something secret, hidden, or invisible, as the occult quality of matter. ——The *occult sciences* are magic, necromancy, &c.——*Occult*, in geometry, is used for a line that is scarce perceptible, drawn with the point of the compasses, or a fine lead pencil.——*Occult disease*, is a term applied to such diseases the causes and treatment of which are not understood.——*Occult qualities*, those qualities in bodies which do not admit of any rational explanation.

OCCULTA'TION, in astronomy, the obscuration of any star or planet by the interposition of any other body, as the moon, &c. *Circle of occultation*, an imaginary circle round the poles, which contains those stars that are not visible in our hemisphere. The term *immersion* is given to the state of a star or planet, when it is so near the sun as to be invisible; also to that of the moon when she begins to be darkened by entering into the shadow of the earth.

OC'CUPANCY, in law, the taking possession of a thing not belonging to any person. *Occupancy*, says Blackstone, gave the original right to the property in the substance of the earth itself.

O'CEAN, the name given to the great mass of salt water which surrounds the land, covering nearly three quarters of the globe; and which is distinguished, for convenience of description, as if divided into



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IT IS A CURIOUS FACT, THAT IN SOME PLACES SPRINGS OF FRESH WATER ISSUE FROM THE SEA, ENTIRELY UNAFFECTED BY THE SALT WATER.

three principal sections. 1. The Atlantic ocean, which divides Europe and Africa from America, and is, in general, about 3000 miles in width; 2. The Pacific ocean, or South Sea, which divides America from Asia, and is generally about 10,000 miles over; 3. The Indian ocean, which separates the East-Indies from Africa, and is 3000 miles across. The other seas, which are called oceans, are only parts or branches of these, and usually receive their names from the countries they border upon. The bed of the ocean presents the same irregularities of aspect as the surface of the land. It is diversified by rocks, mountains, plains, and deep valleys. In some places it has been found impossible to reach the bottom; but the notion that it is anywhere without a bottom is incompatible with the spherical figure of the earth. The greatest depth that ever has been sounded is 7200 feet (by Scoresby, in 1819). The level of the seas is, generally speaking, everywhere the same; arising from the equal pressure, in every direction, which the particles of a fluid exercise upon each other. The ocean, therefore, considered as a whole, has a spheroidal surface, which may be considered as the true surface of our planet. [See TIDES, SEA, &c.]

OCHLOC'RACY, a form of government in which the multitude or common people rule.

O'CHRE, in natural history, a genus of earths slightly coherent, composed of fine, smooth, soft, argillaceous particles, rough to the touch, and readily diffusible in water. Ochres are of various colours, as red, blue, yellow, brown, &c., and consist of alumina and red oxyde of iron. Native red ochre is called *reddle* and *red chalk* in England. The oxyde of iron is sometimes so considerable in this, that the ochre may be reckoned an ore of that metal.

O'CIMUM, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are herbs or undershrubs, and consist of the different kinds of Basil.

OCTAGON, in geometry, a figure of eight sides and eight angles. When all the sides and angles are equal, it is called a *regular octagon*.——In fortification, a place with eight bastions.

OCTAHE'DRON, in geometry, one of the five regular bodies, consisting of eight equal and equilateral triangles.

OCTAN'DRIA, the eighth class of the Linnæan system of plants, containing four orders, viz. *monogynia*, *digynia*, *trygynia*, and *tetragynia*, comprehending those plants which have hermaphrodite flowers, with eight stamens.

OCTANT, an instrument for measuring angles, which by reflection it doubles, and hence it answers the purpose of a quadrant. ——*Octant*, in astronomy, an aspect of two planets when they are distant from each other 45 degrees, or the eighth part of a circle.

OCTAVE, in music, the eighth interval in a scale of sounds, which, being the same as the first, is denoted by the same letter of the alphabet. The most simple perception that we can have of two sounds, is that of unisons; the vibrations there beginning and ending together. The next to this is the octave, where the more acute sound makes precisely two vibrations, while the grave or deeper one makes one; consequently, the vibrations of the two meet at every vibration of the more grave one. Hence unison and octave pass almost for the same concord: hence also the proportions of the two sounds that form the octave are in numbers or in lines, as 1 : 2, so that two chords or strings of the same matter, thickness, and tension, one whereof is double the length of the other, produce the octave. The number of upper and lower octaves, or the manner in which several octaves of different heights are to be chiefly distinguished, is not absolutely determined, on account of the continually increasing compass of instruments, particularly stringed instruments, and especially the pianoforte, which, within a short period, has increased a whole octave.

OCTA'VO, in printing, the form of a page which is made by folding a sheet into eight leaves, or sixteen pages. It is often written 8vo.

OCTO'BER, in chronology, the tenth month of the Julian year, consisting of thirty-one days: it obtained the name of October from its being the eighth month in the calendar of Romulus.

OCTODE'CIMAL, in crystalography, an epithet designating a crystal whose prisms have eight faces, and the two summits together ten faces.

OCTO'FID, in botany, an epithet for a calyx cleft or separated into eight segments.

OCTOLOC'ULAR, in botany, having eight cells for seeds.

OCTOPET'ALOUS, in botany, having eight petals or flower-leaves.

OCTOPH'ORUM, among the ancients, was a carriage with eight wheels. It signifies frequently a chair or litter, carried by eight men. This kind of chair was mostly used by the ladies.

OCTOSPERM'OUS, in botany, containing eight seeds.

OCTOSTYLE, in the ancient architecture, is the face of an edifice adorned with eight columns. The eight columns of the octostyle may either be disposed in a right line as in the Pantheon; or in a circle, as in the temple of Apollo Pythius at Delphi, &c.

OCTROI, an old French term (from *auctoritas*) signifying a grant or privilege from government, is particularly applied to the commercial privileges granted to a person or to a company. In a like sense the term is applied to the constitution of a state granted by a prince, in contradistinction to those which are derived from a compact between a ruler and the representatives of the people. It also signifies a tax levied at the gates of some cities in France upon all articles of food.

OC'ULAR PAR'ALLAX IN VISION, *and Law of Visible Direction*:—In the Pro-

IN MANY PLACES OF THE GLOBE THE TIDE FLOWS TWICE IN TWENTY-FOUR HOURS, ACCORDING TO THE PRINCIPLES OF THE SIDEREAL ATTRACTION.



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the most considerable is the Pindaric, which is distinguished by its boldness and the rapidity of its flights; but Pindar, though the most daring and lofty of all the lyric poets, amidst all his raptures has preserved harmony, and often uniformity, in his versification; yet so great is his variety of measures that the traces of sameness are hardly perceptible.

ODONTAL'GIA, in medicine, the tooth-ache. This painful disease is too well known to require any description. It may attack persons at any period of life, though it is most frequent in the young and plethoric. From the variety of causes which may produce this affection, it has received various distinctive names.

ODONTAL'GICA, medicines which relieve the tooth-ache.

ODONTIA'SIS, in medicine, teething, or cutting the teeth.

ODONTOI'DES, in anatomy, an epithet for the tooth-like process of the second vertebræ of the neck.

ODE'ON, or ODE'UM, in Greek and Roman architecture, a public building devoted to poetical and musical contests. The first odeon was built at Athens by Pericles, and was afterwards used for popular meetings and the holding of courts. The odeons resembled other theatres, except that they were not so large, and were covered with a roof.——The name *Odeon* has been given to one of the theatres in Paris, rebuilt, after having been destroyed by fire, in 1819.

OD'YSSEY, a celebrated epic poem of Homer, wherein are related the adventures of Ulysses, in his return from the siege of Troy.

ŒCUMEN'ICAL, signifies the same with general, or universal; as œcumenical council, bishop, &c.

ŒDE'MA, in medicine and surgery, a sort of phlegmatic tumour, or anasarcous swelling, attended with paleness and cold, yielding little resistance, retaining the print of the finger when pressed with it, and accompanied with little or no pain.

ŒNISTE'RIA, in antiquity, sacrifices offered to Hercules by the Athenian youth on their first cutting their beards.

ŒNOTHE'RA, in botany, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species are biennials, and consist of the different kinds of Tree-primrose.

ŒSOPH'AGUS, in anatomy, the gullet, a membranous and muscular canal, reaching from the fauces to the stomach, and conveying into it the food taken at the mouth. Its figure is somewhat like a funnel, and its upper part is called the *pharynx*.

ŒS'TRUS, in natural history, the Gadfly, a genus of insects of the order *Diptera*. There are several species of this genus, most of which are extremely troublesome to horses, sheep, and cattle. The principal European species is the *Œstrus bovis*, or the ox-gadfly, which is of the size of a common bee. The female, when ready to deposit her eggs, fastens on the back of the animal, and piercing the skin with the tube situated at the lip of the abdomen, deposits an egg in the puncture, and then proceeds to another spot at some distance from the former, repeating the same operation at intervals. The pain which the operation occasions is extreme; and hence cattle, as if foreseeing their cruel enemy, are observed to be seized with horror when apprehensive of the approaches of the female œstrus, flying instantly to the nearest pond or pool of water, it having been observed that this insect rarely attacks cattle when standing in water.——The *Œstrus equi* deposits its eggs upon such parts of the skin of horses as are subject to be much licked by the animal, and thus they are conveyed to the stomach, where the heat speedily hatches the larvæ, so well known under the name of *botts*. The *Œstrus ovis* deposits its eggs in the nostrils of sheep, where the larva is hatched, and immediately ascends into the frontal sinuses, attaching itself very firmly to the lining membrane by means of two strong hooks situated at its mouth. All the insects of the genus *Œstrus* are thus distinguished: the trunk concealed between two tumid lips, which are merely separated by a small orifice; antennæ short and setaceous. The oviduct, through which the eggs are extruded, consists of a membranaceous, cylindrical tube, furnished with three short bristles. The pupa is hard, and of an oval form, burrowing in the earth and under stones, where it experiences its final transformation into a winged insect.

OFFEN'CE, in law, the violation of any law; thus is termed *capital* if punished with death, and not capital if visited with any other punishment.

OF'FERINGS, in a scripture sense, denote gifts presented by men at the altar, in order to represent their entire dependence on and submission to the Deity. They constituted a principal part of the Israelitish worship. With regard to their meaning and object, these offerings were either thank-offerings and peace-offerings, which consisted of some animal, and were usually accompanied with offerings of vegetable food: or trespass and sin-offerings, in which only animals were used. In the last-mentioned cases, the priests were accustomed to sprinkle the parties who made the offerings with the blood of the victims, as a sign of reconciliation with Jehovah; and where the offering was an expression of the penitence and expiation of the whole people, it was usual to burn the victim; but if it concerned only private persons, the priests used to eat the flesh.——*Offerings*, in a modern sense, are church dues, payable by custom; as the Easter offerings, or the offerings at marriages, &c.

OFFERTO'RIUM, in archæology, a piece of silk, or fine linen, anciently made use of to wrap up the occasional offerings made in the church.

OF'FERTORY, in the Romish church, an anthem chanted or a voluntary played during the offering and a part of the mass. In the Church of England, it denotes certain sen-





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tences in the communion office, read while the alms are being collected.

OF'FICE, a particular charge or trust, or a dignity attended with a public function; as the office of a secretary of state, the office of a sheriff, of a justice of peace, &c. ——*Offices* are civil, judicial, ministerial, executive, legislative, political, municipal, ecclesiastical, diplomatic, military, &c.—— *Office* also signifies a place or apartment appointed for officers, agents, clerks, &c. to attend in, in order to discharge their respective duties and employments.

OF'FICER, a person commissioned or authorized to fill a public situation or perform any public duty. Officers are civil, military, or ecclesiastical. The great officers of the crown, or of state, are the lord high-steward, the lord high-chancellor, the lord high-treasurer, the lord president of the council, the lord privy-seal, the lord-chamberlain, the lord high-constable, and the earl-marshal.——In the army, *General officers* are those whose command is not limited to a single company, troop, or regiment; but extends to a body of forces, composed of several regiments: such are the general, lieutenant-general, major-generals, and brigadiers. —— *Staff officers*, those who belong to the general staff, as the quarter-master-general, adjutant-general, aides-de-camp, &c. —— *Commissioned officers* are those appointed by a commission from the crown, from the general to the cornet inclusive. —— *Brevet officers*, those who hold a rank without pay, or take rank according to the commission which they hold from the sovereign, which is superior to the one for which they actually receive pay.——*Subaltern officers*, all officers under the rank of captain.——*Non-commissioned officers*, are serjeant-majors, quarter-master-serjeants, serjeants, corporals, and drum and fife-majors, who are appointed by the commanding officers of the regiments.——In the navy, officers are distinguished into—*Commissioned officers*, who hold their commissions from the lords of the admiralty;—*Flag officers*, admirals who hoist flags at the mast-head;—*Petty officers*, who are appointed by the captains.

OFFI'CIAL, an ecclesiastical judge appointed by a bishop, chapter, archdeacon, &c., with charge of the spiritual jurisdiction of the diocese.——*Official* is also a deputy appointed by an archdeacon, as his assistant, who sits as judge in the archdeacon's court.

OFFI'CINAL, in pharmacy, an appellation given to such medicines, whether simple or compound, as are directed by the colleges of physicians to be constantly kept in the apothecaries' shops.

OFF'ING, in sea-language, is a distance from the shore sufficient to afford deep water, and to need no assistance from a pilot to conduct a ship: thus we say, we saw a ship in the *offing*; or when a ship keeps at a distance from the shore, she is said to "keep her *offing*."

OFF'SET, in surveying, a perpendicular let fall from the stationary lines to the hedge, fence, or extremity of an inclosure. ——In accounts, a sum *set off* against another sum or account, as an equivalent.—— *Offset*, in gardening, the young shoots that spring from the roots of plants, which being carefully separated and planted in a proper soil, serve to propagate the species.

OGEE, or O. G., in architecture, a moulding, consisting of two members, the one concave, the other convex; or, of a round and a hollow, somewhat like an S.

O'GIVE, in architecture, an arch or branch of a Gothic vault; which, instead of being circular, passes diagonally from one angle to another, and forms a cross with the other arches. The middle, where the ogives cross each other, is called the key. The members or mouldings of the ogives are called nerves, branches, or reins; and the arches which separate the ogives, double arches.

OIL, an unctuous inflammable substance, derived from various substances, both animal and vegetable. The distinctive characters of oil are inflammability, fluidity, and insolubility in water. From the peculiar properties of different oils, they are naturally divided into two kinds, the fixed or fat oils, and the volatile or essential oils: the former require a high temperature to raise them to a state of vapour, but the volatile oils are volatilized at a temperature of boiling water, and even at a lower one. When exposed to the action of the air, the oils by degrees lose their liquidity, thicken, and occasionally become hard. Such as become indurated so as not to stain paper when applied to it, take the name of *drying* oils; such as linseed oil, poppy-seed oil, nut oil, &c. Such as do not harden in this way are called *unctuous* oils, as olive oil, almond oil, rape-seed oil, &c. Those which burn best are a compound of carbon and hydrogen, which, raised into gas by the application of a heated body, absorbs the adjacent oxygen in the air, and fixing it, thereby displays heat, flame, and light.——The fat oils are medicinally prescribed as relaxing, softening, and laxative remedies; they enter into many medical compounds, such as balsams, unguents, plasters, &c.; and they are often used as food on account of the mucilage they contain. Essential oils are employed as cordial, stimulant, and antispasmodic remedies.

OIL GAS. Very decided advantages were at one time claimed for oil gas over coal gas; but the superior cheapness of the latter, and the high state of perfection to which it has arrived, have in a measure superseded the use of the former. It may, however, be well to give the process of its manufacture:—A quantity of oil is placed in an air-tight vessel, in such a manner that it may flow into retorts, which are kept at a moderate red heat, and in such proportions as may regulate the production of gas to a convenient rate; and provision is made that this rate may be easily governed at the will of the operator The oil, in its passage through the retorts, is principally decomposed, and converted into gas proper for illumination. As a further precaution,





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GREAT QUANTITIES OF OLIVE OIL ARE USED IN THE MANUFACTURE OF SOAP; AND IN THE SOUTH OF EUROPE IT IS BURNED IN LAMPS.

to purify the gas from oil which may be suspended in it in the state of vapour, it is conveyed into a wash vessel, where, by bubbling through water, it is further cooled, and rendered fit for use. It then passes, by a proper pipe, into a gasometer, from which it is suffered to branch off in pipes in the usual manner.

OLEA, the Olive-tree, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*; consisting of the different kinds of olive trees.

OLE'FIANT GAS, in chemistry, a colourless elastic fluid, which has no taste, and scarcely any odour when pure. It extinguishes flame, is unable to support the respiration of animals, and is set on fire when a lighted candle is presented to it, burning slowly with a dense white light. It is prepared by mixing in a capacious retort six measures of strong alcohol with sixteen of concentrated sulphuric acid, or one measure of common alcohol and three of oil of vitriol, and heating the mixture over an argand lamp. The acid soon acts upon the alcohol; effervescence ensues, and olefiant gas passes over. When olefiant gas is mingled with chlorine in the proportion of one measure of the former to two of the latter, they form a mixture which takes fire on the approach of flame, and which burns rapidly, with formation of muriatic acid gas, and a deposition of a large quantity of charcoal. But if the gases are allowed to remain at rest after being mixed together, a very different action ensues. The chlorine, instead of decomposing the olefiant gas, enters into direct combination with it, and a yellow liquid, like oil, is generated. This substance is sometimes called *chloric ether* or *carburet of chlorine*. To obtain it pure, and in a dry state, it should be well washed with water, and then distilled from chloride of calcium; thus purified, it is a colourless, volatile liquid, of a peculiar sweetish taste and ethereal odour.

OLE'IC ACID, in chemistry, an oily fluid, without taste and smell. When potash and hog's lard are saponified, the margarate of the alkali separates in the form of a pearly looking solid, while the fluid fat remains in solution, combined with the potash. When the alkali is separated by tartaric acid, the oily principle of fat is obtained, which is purified by saponifying it again and again, recovering two or three times, by which means the whole of the margarate is separated. As this oil has the property of saturating bases, and forming neutral compounds, it is called an acid.

O'LEINE, in chemistry, the thin oily part of fats, naturally associated in them with glycerine, margarate, and stearine.

OLEOSAC'CHARUM, in chemistry, a mixture of oil and sugar.

OLERA'CEÆ, one of the Linnæan natural orders of plants, containing pot-herbs, as spinage, thyme, mint, &c.

OLFAC'TORY NERVES, the pair of nerves which proceed from the brain to the nose, by which the sense of smelling is preserved.

OLIBA'NUM, in chemistry, a gum-resin brought from Turkey and the East Indies, which consists of tears or drops of a transparent yellow colour and disagreeable smell. It was formerly much used for incense; and in medicine it is used in fumigations as a resolvent.

OLI'GARCHY, a form of government, wherein the administration of affairs is lodged in the hands of a few persons.

OLIVE *(olea)*, in botany, a genus of trees belonging to the *diandria-monogynia* class of plants. The *olea Europea*, or common olive, the sort principally cultivated for its fruit, grows to the height of twenty or thirty feet, having an upright stem with numerous branches: the fruit is an unilocular drupe of a somewhat oval shape, containing an ovato-oblong nut with a kernel of the same shape: and it is almost the only example of a fruit with an oily pulp. The olive was celebrated in the mythology of the ancients; and olive wreaths were used to crown the brows of victors. By the Greeks and Romans it was revered, and was considered the emblem of peace and humility. It furnished that oil which, for a long time, was the only kind known, and which was employed by most nations in religious ceremonies. The *athletes* anointed their bodies with olive oil when preparing for gymnastic exercises; and it was very generally used in the same manner on coming out of the bath. The oil is still the principal product of the olive, and is consumed in immense quantities for culinary purposes in many countries. It is inodorous, and the taste is very mild; but if taken in large quantities it is purgative. The oil, together with the pickled fruit, is the source of a very extensive commerce between the Mediterranean and the north of Europe: in many districts the whole population is entirely dependent on this branch of business. The oil which is obtained by simple expression, without the use of boiling water, is the best and purest; and that made in some parts of France is now the most highly esteemed. The olive grows in every kind of soil, provided it is not marshy. Dr. Clarke mentions an interesting fact, "that, during a period of little more than two thousand years, Hebrews, Assyrians, Romans, Moslems, and Christians, have been successively in possession of the rocky mountains of Palestine; yet the olive still vindicates its paternal soil, and is found, at this day, upon the same spot which was called by the Hebrew writers *Mount Olivet*, and the *Mount of Olives*, eleven centuries before the Christian era."

OLI'VINE, in mineralogy a gem of inferior value, being a subspecies of prismatic chrysolite, of a brownish or olive-coloured green, often inclining to a yellow hue, usually found in roundish grains in other stones. It frequently occurs in basaltic rocks, and is met with in the vicinity of Vesuvius, also in Saxony, Silesia, Hungary, &c.

OLYM'PIAD, a period of four years, by which the Greeks reckoned their time. This method of computation took its rise from

THE WOOD OF THE OLIVE TREE IS BEAUTIFULLY VEINED, HAS AN AGREEABLE SMELL, AND IS SUSCEPTIBLE OF AN EXTREMELY HIGH POLISH.



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the Olympic games, which were celebrated every fifth year near the city Olympia, in Peloponnesus. The Olympiads were sometimes called *Anni Iphiti*, from Iphitus, who instituted, or at least renewed the solemnity of the Olympic games. Chronologists differ with regard to the exact time of their commencement; but, according to the most prevalent opinion, the first Olympiad commenced 775 years before the birth of Christ, and 22 years before the foundation of Rome. The computation by Olympiads ceased at the three hundred and sixty-fourth Olympiad, in the year 440 of the Christian era. History is much indebted to the Olympiads: they have served to fix the time to many momentous events; and, indeed, before this method of computing time was observed, the history of Greece is mostly fabulous, or filled with anachronisms.

OLYM'PIC GAMES, in antiquity, solemn games among the Greeks in honour of the Olympian Jupiter, which were celebrated once in every four years, as above stated. Besides running, leaping, boxing, wrestling, and the quoit, there were horse-racing, chariot-racing, &c. Sometimes the prize of eloquence, poetry, and the other fine arts was disputed. The victor's prize in each of these contests was a wreath of wild olive. A prize of small value was chosen, that the combatants might be stimulated by courage and the love of glory, more than by the sordid hope of gain. In fact, the glory of the conquerors (who were termed *Olympionicæ*) was inestimable and immortal. Their statues were erected at Olympia in the sacred wood of Jove; they were conducted home in triumph on a car drawn by four horses; and were complimented by poets, painters, &c.; nay, many privileges and immunities were thenceforth conferred on them. Not only all the states of Greece, but foreign nations also resorted to these games, in great numbers, from the extremities of Egypt, from Libya, Sicily, and other countries. The combatants contended naked: at first they used to tie a scarf round their waist; but this having once thrown down a combatant by entangling his feet, and thereby caused him to lose the victory, it was thenceforth laid aside. The priestesses of Ceres excepted, no females were permitted to be present; and if any woman was found to have passed the river Alpheus during the solemnity, she was to be thrown headlong from a rock.

OM'BRE, a game at cards, borrowed from the Spaniards, and generally played by three persons, though sometimes by two or five.

OMBRE DE SOLIEL, or *shadow of the sun*, in heraldry, is when the sun is borne in armoury, so that the eyes, nose, and mouth, which at other times are represented, do not appear: and the colouring is so slight that the field is seen through it.

OME'GA, the name for the Greek long o. It was the last letter in the Greek alphabet, as *alpha* was the first; and from the expression in Revelations (c. i, v. 8), "I am Alpha and Omega, the beginning and the ending, saith the Lord, which *is*, and which was, and which is to come, the Almighty," the characters of alpha and omega became with the Christians symbolical hieroglyphics.

O'MELET, a kind of pancake or fritter, made of eggs and other ingredients; very usual in Spain and France.

O'MEN, literally an indication of some future event; but, in the history of superstition, an accident supposed to forerun misfortune. Among the ancients, there were omens which came from outward objects; and internal omens, or those which affected the persons themselves. Of this sort, were consternations, or *panic fears*, that seized upon men without any visible cause, and were therefore imputed to the demons, and especially to the god Pan. Nay, there are many persons at the present day, whose education and society might be expected to give them better ideas, who still talk seriously of presentiments or internal omens; and to whom almost every object, animate or inanimate, together with every circumstance that occurs, is reckoned ominous. The practice of making ordinary events ominous of good or bad fortune, probably took its rise in Egypt, the parent country of almost every superstition of paganism; but wherever it may have arisen, it spread itself over the inhabited globe, and still prevails among the vulgar and unenlightened of all nations.

OMEN'TUM, in anatomy, the caul or epiploon; a membranaceous covering of the bowels, usually furnished with a large quantity of fat; being placed under the peritonæum, and immediately above the intestines.

OM'NIBUS (Latin, the dative plural of *omnes*, all; *i. e. for all*), a word used for a long carriage now too well known as a public conveyance for passengers, to require a further description. They are of Parisian origin, and their acknowledged convenience soon brought them into use in London, &c.

OM'NIUM, a term applied to the public funds to express the whole of the stock or securities which the subscribers to a loan receive from government. As the omnium of every loan is the subject of extensive speculations, it generally is liable to considerable variations with respect to its current price, sometimes selling at a high premium, at other times at a discount.

OMO-HYOIDE'US, in anatomy, a muscle situated between the *os hyoides* and shoulder, which pulls the former obliquely downwards.

OM'PHACINE OIL, in chemistry, a viscous brown juice extracted from green olives; the word *omphacine* signifying that which pertains to or is expressed from unripe fruit. The wrestlers in the ancient gymnastic exercises used to anoint their bodies with this oil.

OMPHA'CION, the juice of unripe grapes; and by some applied to that of wild apples, or crabs, usually called *verjuice*.

OM'PHACITE, a mineral of a pale leek green colour, massive or disseminated, and in narrow radiated concretions.



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THE ODOUR OF ONIONS, WHICH IS FOUND SO DISAGREEABLE, IS CAUSED BY THEIR CONTAINING A CONSIDERABLE QUANTITY OF SULPHUR.

OMPHACI'TIS, in botany, a small kind of gall or excrescence from the oak.

OMPHALOCE'LE, in surgery, an umbilical hernia, or rupture of the navel.

OMPHALOPTER, or OMPHALOPTIC, an optical glass that is convex on both sides; usually called a convex lens.

OMPHALOTOMY, in surgery, the operation of dividing the naval string.

ON'ION (*allium*), in botany, a genus of herbaceous plants, with biennial or perennial bulbous roots. About sixty species are known. The onion proper (*allium cepa*) is abundantly cultivated throughout Europe, and is used for various culinary purposes. It is essentially milder in warm climates than in the north.

ONEIROCRITICA, the art of interpreting dreams, and foretelling future events from them. In the Scripture we frequently find, that under the Jewish dispensation, some men really predicted from dreams what truly came to pass, as was the case with Joseph, and also with Daniel during the captivity; but we ought not from these Scripture instances to conclude that dreams are capable of interpretation from artificial rules, because we have reason to suppose that a particular revelation was granted for the purpose.

ONEIROMANCY, the art of divination by dreams.

ONGLE'E, in heraldry, an appellation given to the talons or claws of beasts, or birds, when borne of a different colour from that of the body of the animal.

ONIS'CUS, in entomology, a genus of insects, which have limbs but no wings, and which have oblong bodies and numerous legs, or more than six pair. This genus comprehends the several sorts of millepedes.

ONOMATOPŒ'IA, in rhetoric, a figure where words are formed to resemble the sound made by the things signified; as the buzz of bees, the cackling of hens, &c.

ONTOL'OGY, the doctrine of being; a name formerly given to that branch of metaphysics which treats of the essential qualities of things.

O'NUS PROBAN'DI, in law, the burden of proving what has been alleged against another.

ON'YX, in mineralogy, a species of agate, stratified with opaque and translucent lines; being a semi-pellucid gem of different colours. The bluish white kind is looked upon as the true onyx of the ancients.——In medicine, an abscess, or collection of pus between the lamellæ of the cornea; so called from its resemblance to the *onyx* stone. The diagnostic signs are, a white spot or speck, prominent, soft, and fluctuating.

O'OLITE, in mineralogy, a species of limestone composed of globules clustered together; sometimes occurring in concentric layers, at other times being compact, or radiated from the centre to the circumference.——The *oolitic series*, in geology, includes all the strata between the iron sand above and the red marl below. In these strata are found the best materials for building which the midland and eastern counties of England produce; and the formations are systematically divided into—1. *the upper oolite*, consisting of the oolitic strata of Portland, Aylesbury, &c. with the argillo-calcareous Purbeck strata; 2. *the middle oolite*, viz. the oolitic strata associated with the coral rag, calcareous sand and grit, &c.; and 3. *the lower oolite*, which contains numerous oolitic strata, occasionally divided by thin argillaceous beds, great argillo-calcareous formation of lias, and lias marl.

OPA'CITY, the quality of a body which renders it impervious to the rays of light. It may exist in bodies of any colour.

O'PAL, in mineralogy, a precious stone of various colours, which comes under the class of pellucid gems. It is found in many parts of Europe, especially in Hungary. When first dug out of the earth it is soft, but it hardens and diminishes in bulk by exposure to the air. The substance in which it is generally found is a ferruginous sandstone. It is generally dull owing to foreign admixtures; but in some a lively play of light is observable; while others show different colours by reflected and transmitted light. There are many varieties or species, the chief of which are, 1. *noble opal*, which exhibits brilliant and changeable reflections of green, blue, yellow, and red; 2. *fire opal*, which simply affords a red reflection; 3. *common opal*, whose colours are white, green, yellow, and red, but without the play of colours; 4. *semi-opal*, the varieties of which are more opaque than common opal; 5. *wood opal*, which appears in the shape of trunks, branches, and roots of trees; 6. *hydrophane*, which assumes a transparency only on being thrown into water; 7. *hyalite*, which occurs in small reniform and botryoidal shapes, and is transparent; and 8. *menilite*, which occurs in tuberose masses, and is opaque.

OPALE'SCENCE, a coloured shining lustre reflected from a single spot in a mineral. It is sometimes simple, and sometimes radiated.

OP'ERA, a dramatic composition, of which music makes the essential part; and in this it is distinguished from other dramas accompanied by music. According as the serious or the comic character prevails in the opera, it is termed *opera seria* or *opera buffa*. The name of *grand opera* is given to that kind which is confined to music and song; of which the *recitative* is a principal feature. An *operetta* is a short musical drama of a light character: to which species of composition the French *vaudeville* belongs. Italy may be considered the birth-place and cradle of the opera; but the German romantic operas have also, of late years, been cultivated with great success.

OP'ERA-GLASS, in optics, so called from its use in theatres, is a diagonal perspective, and consists of a tube of about four inches long, in each side of which there is a hole exactly against the middle of a

A SPURIOUS SUBSTANCE IS SOMETIMES SOLD FOR BLACK AND GREEN OPAL, AND SUBSTITUTED FOR IT IN ARTICLES OF JEWELLERY.



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THE CHINESE PURIFY THE CRUDE OPIUM BY BRUTHING IT, THEREBY GIVING TO IT A FRAGRANT AND AGREEABLE PERFUME.

GOOD OPIUM IS HARD IN THE COLD, BUT BECOMES FLEXILE AND DOUGHY WHEN IT IS WORKED BETWEEN THE HOT HANDS.

plane mirror, which reflects the rays falling upon it to the convex glass, through which they are refracted to the concave eye-glass, whence they emerge parallel to the eye at the hole in the tube; and as the glass is made to point at a different object from that which is viewed, it may be used without any one knowing exactly who is observed.

OPERA'TION, in surgery, any methodical action of the hand, with or without instruments as the case may require, on the human body, with a view to heal an injured or diseased part. The person who performs this is called an *operator*.——In chemistry, any process that leads to a given result.——Military or naval *operations*, signify the movements of an army or fleet, to effect some object of warfare.

OPER'CULUM, in conchology, the plate or lid with which some species of testaceous animals close the aperture of their shells.

OPHIDI'AN, in zoology, a term designating the serpent species, or an order of vertebral animals destitute of feet or fins.

OPHID'ION, in ichthyology, a fish found in the Mediterranean, resembling the common eel, but shorter, more depressed, and of a paler colour.

OPHIDI'UM, in ichthyology, a genus of fishes of the *Apodal* order; having the head naked; teeth both in the jaws and palate; gill-membrane seven-rayed; and body eniform.

OPHIOL'OGY, that part of natural history which treats of serpents, or which arranges and describes the several kinds.

OPHIOM'ANCY, the art of divining or predicting events by the actions of serpents, as practised by the ancients.

O'PHITE, in mineralogy, serpentine or green porphyry; a dusky green stone of different shades, sprinkled with spots or crystals of a lighter green.

O'PHRYS, in botany, a genus of plants, class 20 *Gynandria*, order 1 *Diandria*. The species are bulbs.

OPHTHAL'MIA, in medicine, an inflammation of the mucous membrane which covers the globe of the eye, and of the correspondent surface of the eye-lids. Its characteristic marks are pain and redness, and it may be induced by many different exciting causes; as sudden transition from heat to cold; residence in damp or sandy countries in the hot season; exposure of the eyes to the vivid rays of the sun; the suppression of some habitual discharge, &c. ——The *ophthalmic nerve* is the first branch of the ganglion or expansion of the fifth pair of nerves.

OPHTHALMODYN'IA, in medicine, a violent pain in the eye, without any or with very little redness. The sensation of pain is various, as itching, burning, or as if gravel were between the globe of the eye and lids. There are various species of this disease, distinguished by names indicative of their respective symptoms.

OPHTHALMOPTO'SIS, in medicine, a falling down of the globe of the eye on the cheek, canthus, or upwards, the globe itself being scarce altered in magnitude. It is caused by a relaxation of the muscles and ligamentous expansions of the globe of the eye.

OPHTHALMOS'COPY, a term given to that branch of physiognomy which deduces the knowledge of a man's disposition from the appearance of the eyes.

O'PIUM, the inspissated juice of a species of poppy *(papaver somniferum)*, a native of Turkey and other Eastern countries, but now naturalized in many parts of Europe. Opium is the most energetic of narcotics, and at the same time one of the most valuable of medicines; but we have the authority of some of the most eminent physicians for asserting, that the habitual use of it is infinitely more injurious to the health than ardent spirits are, and that it has of late been greatly on the increase in this country. Indeed, so notorious is this fact, that the subject had called forth the particular attention of the different insurance offices, who found that they had sustained considerable loss from, as well as that a new risk had been created by, the enormous increase in the consumption of opium. Madden, in his travels in Turkey, &c., speaking of the opium-eaters of Constantinople, whom he saw in a coffee-house frequented by them, says, "Their gestures were frightful; those who were completely under the influence of the opium talked incoherently; their features were flushed; their eyes had an unnatural brilliancy, and the general expression of their countenances was horribly wild. The effect is usually produced in two hours, and lasts four or five. The debility, both moral and physical, attendant on its excitement, is terrible; the appetite is soon destroyed, and every fibre in the body trembles; the nerves of the neck become affected, and the muscles get rigid: several I have seen in this place who had wry necks and contracted fingers, but still cannot abandon the custom. They are miserable till the hour arrives for taking their daily dose."—The opium of commerce is in masses of different sizes. It is somewhat hard, of a brown colour, and a bitter, acrid, and nauseous taste. Its odour is peculiar and characteristic. It contains acidulous meconate of morphia, extractive matter, mucilage, fecula, resin, fixed oil, caoutchouc, a vegeto-animal substance, debris of vegetable fibres, and the white crystaline salt of opium, now known under the name of *narcotine*.—The following is the usual mode adopted in the preparation of opium in India. A little before the flower of the poppy is formed, a longitudinal incision is made in the stalk, close under the bulbous capsule which contains the rudiments of the flower. From this incision the opium exudes in the form of a gum, and is gathered by the women and children.

OPI'NION, the judgment which the mind forms of any proposition, for the truth or falsehood of which there is not sufficient evidence to produce absolute belief. Some things are known to be scientifically correct, or capable of mathematical demonstration; but other things depend on testi-



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RAYS FALLING PERPENDICULARLY UPON THE ATMOSPHERE ARE EQUALLY ATTRACTED, AND COME TO THE EARTH IN A STRAIGHT LINE.

ACCORDING TO THE NEWTONIAN THEORY OF OPTICS, THE ORIGIN OF LIGHT IS TO BE TRACED TO A SUCCESSIVE EMISSION OF LUMINOUS PARTICLES.

mony. When one or two men relate a story including many circumstances to a third person, and another comes who positively contradicts it, either in whole or in part, he, to whom those jarring testimonies are given, weighs all the circumstances in his own mind, balances the one against the other, and lends an assent, more or less wavering, to that side on which the evidence appears to preponderate. This assent is his *opinion* respecting the facts of which he has received such different accounts.

OPOBAL'SAM, in medicine, the balm or balsam of Gilead, an odoriferous unguent and cosmetic, of a greenish yellow colour, a bitterish aromatic flavour, and an acidulous fragrant odour. The shrub or tree producing this balsam is of the genus *Amyris*, and grows spontaneously in Arabia Felix.

OPODEL'DOC, in pharmacy, a saponaceous camphorated liniment, being a solution of soap in alcohol, with the addition of camphor and essential oils; allowed to be a good remedy for sprains, bruises, &c.

OPO'PANAX, a gum resin, of a tolerably firm texture, usually brought in loose granules or drops, but sometimes in larger masses, of a reddish yellow colour, and white within. It has a strong smell and an acrid taste, and is obtained from the root of an umbelliferous plant (the *pastinaca opoponax*) growing in eastern climates.

OPOS'SUM, in zoology, an animal of the genus *Didelphis*, chiefly found in America, and living in holes and woody places. The female is remarkable for having a pouch in the abdomen, in which she protects and carries her young. On the ground the opossum's motions are awkward and clumsy; but on the branches of a tree he moves with great celerity and ease, using his tail, which is prehensile, to assist his motions. Instead of taking flight at the approach of danger, they lie close to the branch on which they were clinging: when they are discovered, they are taken by shaking the branch violently; they then drop to the ground, and, if the hunter is unaccompanied by dogs, they steal slowly away, and, gathering themselves into as small a compass as possible, remain perfectly quiet, as if feigning death. After remaining thus till they think themselves secure, they steal off; if, however, any sudden noise be made, they again assume their death-like position, in which they will persevere even when taken up and handled. This well known attribute of the opossum has given rise to the American proverb, "He is playing 'possum," which is applied to any one who is thought to be acting deceitfully.

OPPIL'ATIVES, medicines which shut up the pores

OPPOSITIPO'LIOUS, in botany, an epithet for a peduncle placed opposite to the leaf.

OPPOSI'TION, in politics, a word well understood in free representative governments, but nowhere else; denoting that intelligent and independent spirit in the members of either house of parliament which induces them to persevere in opposing whatever legislation is injurious to the state, but which does not so far influence them as to oppose what is beneficial. A temperate and consistent opposition is therefore an essential element of good government; for though it may struggle against an existing administration, it contributes at the same time to the soundness and vigour of the body politic. But when it blindly follows the dictates of an ambitious leader, merely to thwart the operations of government, or supports some clamorous demagogue, who prates about patriotism while he insidiously undermines the constitution, such opposition is justly designated *factious*, and held in abhorrence by all rational and honest men. The late Mr. Wilberforce described the party generally opposing those in power, as "never really wishing mischief to the country; but only so much mischief as might drive their opponents out, and place themselves in their room." Amiable statesmen! honest representatives!——*Opposition*, in logic, the disagreement between propositions which have the same subject and the same predicate.——In rhetoric, a figure whereby two things are joined, which seem incompatible.——In geometry, the relation of two things, between which a line may be drawn perpendicular to both.——In astronomy, that aspect or situation of two stars or planets, wherein they are diametrically opposite to each other, or 180 degrees apart.

OPTATIVE, in grammar, a mode or form of a Greek verb, by which is expressed the wish or desire to do a thing.

OPTE'RIA, in antiquity, presents made by the bridegroom to the bride when he first saw her.

OPTICS, the science which treats of the causes of vision, and of the effects of light, direct, reflected, or refracted. In this comprehensive sense, Newton called his inimitable book on light and colours, a Treatise on *Optics*. In a more simple application, *optics* is the science of direct vision only; while the science of the laws and properties of the rays of light, when considered as reflected, are called *catoptrics*, and the science of refracted rays, *dioptrics*; so that, in its general sense, optics comprehends the whole of that of which catoptrics and dioptrics are two parts. From the days of Pythagoras to those of our contemporary, Sir David Brewster, the science of optics may be said to have been gradually developing. To give anything like a history of it, or to do justice to the eminent philosophers who have distinguished themselves in advancing it to its present state of perfection, would therefore be impossible in our limits. [Under the different heads of LIGHT, REFLECTION, REFRACTION, the EYE, MICROSCOPE, TELESCOPE, &c. &c., further information must be sought.]——*Optic nerves*, in anatomy, the second pair of nerves of the brain, which perforate the bulb of the eye, and serve for the sense of sight.——*Optic angle*, is that which the



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optic axes of the eyes make with one another, as they tend to meet at some distance before the eyes.——*Optic axis*, is the axis of the eye, or a line going through the middle of the pupil and centre of the eye.——*Optic place of a star*, in astronomy, that point of its orbit in which it appears to be to our eye.——*Optic pyramid*, a pyramid formed by rays drawn from the several points of the perimeter to the eye.

OPTI'MATES, in Roman antiquity, one of the divisions of the Roman people, opposed to the *Populares*. It does not certainly appear what were the characteristic differences betwixt these two parties. Some say the *Optimates* were warm supporters of the dignity of the chief magistrate, and sticklers for the grandeur of the state; caring little for the other classes: whereas the *Populares* boldly stood up for the rights of the people, pleaded for larger privileges, and laboured to bring matters nearer to a level. Tully says, that the Optimates were the best citizens, who wished to deserve the approbation of the better sort; and that the Populares courted the favour of the populace, not so much considering what was right, as what would please the people and gratify their own thirst of vain glory. Perhaps it was as difficult to define the true characters of the Optimates and Populares of ancient Rome, as it is to arrive at a satisfactory elucidation of the meaning of Tories and Whigs, or Conservatives and Liberals (to use the distinctive appellations applied by the parties to themselves) of the present day in Britain.

OPTI'ME, a scholar in the first class of mathematics at Cambridge.

OPTIMISM, that philosophical and religious doctrine which maintains that this world, in spite of its apparent imperfections, is the best that could have been devised, and that everything in nature is ordered for the best.

OR, in heraldry, a colour, otherwise called *gold*, or *yellow*, which is represented by small dots all over the field or charge.

ORACLE, in the history of heathen superstition and imposture, a pretended revelation of future events, or the will of supernatural powers, through the medium of a priest or priestess, the most famous of which were those of Apollo at Delphi, and of Jupiter Ammon in Thebes. In the founding of cities and colonies, the introduction of new governments, the undertaking of important enterprises, and particularly in all cases of great necessity, the oracles were consulted, and rich gifts presented to them. Darkness and ambiguity in the responses were made to cover those mistakes which would otherwise have disclosed the imposture; and thus for many centuries they obtained veneration and homage, not only of the ignorant multitude, but of monarchs, of warriors, and philosophers.

ORANGE-TREE (*citrus aurantium*), in botany, a low, evergreen, branching tree, bearing leaves resembling those of the laurel, and white flowers, containing about twenty stamens, and disposed in clusters of from two to six upon a common peduncle. The fruit is globose, with a rough rind of a bright yellow colour, and contains a pulp, divided into eight or ten compartments, with seeds in each, and a sweet refreshing juice. The principal varieties are the sweet or China, and the bitter or Seville orange. Mr. Lindley thus speaks of the orange tribe: "The orange, the lemon, the lime, and the citron, fruits which, although natives of India, have now become so common in other countries as to give a tropical character to an European dessert, are the most remarkable products of this order. If to this be added the excellence of the wood, and the fragrance and beauty of their flowers, I know not if an order more interesting to man can be pointed out."—"The productiveness of the common orange is enormous. A single tree at St. Michael's has been known to produce 20,000 oranges fit for packing, exclusively of the damaged fruit and the waste, which may be calculated at one third more." Oranges form an extensive branch of commerce between the Mediterranean and the more northern countries. The tree is exceedingly long-lived; and an essential oil is obtained from the flowers, which is hardly less esteemed than the celebrated ottar of roses. The wood is fine-grained, compact, susceptible of a high polish, and is employed in the arts.

ORANGEMEN, the name given by the Catholics in Ireland to their Protestant countrymen, on account of their adherence to king William (of the house of Orange), while the former party supported the cause of James II.

ORANG-OUTANG (*Simia Satyrus*), in zoology, the satyr or great ape, an animal with a flat face and deformed resemblance of the human form. These animals walk erect, feed on fruits, sleep on trees, and make a shelter against the inclemencies of the weather. They are remarkable for their strength, as well as their ability to use weapons with the hand. Cuvier says that the orang-outang is found only in south-eastern Asia, and that the African animal resembling it is the Chimpansee *(Simia troglodytes)*.

ORATO'RIO, a musical performance of a dignified character, expressing various elevated and tender affections; dramatic, but destined only for musical execution, not for theatrical action. Properly speaking, the oratorio commenced when sacred music was distinctly separated from the worldly. Dr. Burney says, "they commenced with the fathers of the oratory; when, to draw youths to church, they had hymns and sacred stories written in dialogue and set to music. After the first part came the sermon, which the people were induced to stay and hear, to be present at the performance of the second part. The subjects, in early times, were the Good Samaritan, Prodigal Son, Tobit's Story, &c.; and by the excellence of the composition, the band of instruments, and the performance, the Oratory came into great repute;



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THE PRIESTS ALLOWED NO MAN TO CONSULT THE ORACLES BEFORE HE HAD OFFERED COSTLY SACRIFICES, AND MADE RICH PRESENTS.

THE FIRST ORATORIO IN LONDON WAS PERFORMED AT LINCOLN'S INN THEATRE, SITUATED IN PORTUGAL-STREET, IN 1732.

and this species of musical drama obtained the general appellation of *Oratorio*." In the beginning of the 18th century, Pariati, Ceva, Orsini, Spagna, and Metastasio, wrote oratorios; and Caldara, Jomelli, Buononcini, &c. composed the music. But a more elevated character was afterwards given to the oratorio by Handel, who devoted all his power to the chorus.

OR'ATOR, in modern usage, signifies an eloquent public speaker; or a person who pronounces a discourse publicly on some special occasion. In ancient Rome *orators* were advocates of a superior kind, differing from the *patrons:* the latter were allowed only to plead causes on behalf of their *clients;* whereas the former might quit the *forum* and ascend the *rostra* or *tribunal*, to harangue the *senate* or the people. The *orators* had rarely a profound knowledge of the law, but they were eloquent, and their style was generally correct and concise.

OR'ATORY, PRIESTS OF THE, a religious order founded by Philip Neri, in 1574, for the study of theology, and for superintending the religious exercises of the devout; but they are not bound by monastic vows. This order still exists in Italy; but the more important congregation of the *Fathers of the Oratory of Jesus*, founded at Paris in 1611, is no longer in existence.

OR'ATORY, the art by which a speaker is enabled to persuade and convince his hearers, according to the rules of rhetoric. It properly consists of four parts, namely, invention, disposition, elocution, and pronunciation. Quintilian says, "the faculty of speech we derive from nature; but the art from observation." To constitute oratory, the speaking must be just and pertinent to the subject; it must be methodical, all parts of the discourse being disposed in due order and connection; and it must be embellished with the beauties of language and pronounced with eloquence. Diction, manner, gesture, modulation, a methodical arrangement of the several topics to be introduced, and a logical illustration of them, are all essential requisites in oratory; and, as Cicero has observed, "the action of the body ought to be suited to the expressions, not in a theatrical way, mimicking the words by particular gesticulations, but in a manner expressive of the general sense, with a sedate and manly inflection."

ORB, in astronomy, a hollow sphere or space contained between two concentric spherical surfaces.

ORBICULA'RIS, in anatomy, an appellation given to the constrictor-muscle of the lips, or *osculatorius;* as also to the constrictor of the upper eyelid, which rises from the upper apophysis of the maxillary bone, near the larger canthus of the eye, and surrounds the eyelid with a series of circular fibres: this is called *orbicularis palpebrarum*.

ORBIC'ULATE, or ORBIC'ULAR, in botany, an epithet for a leaf whose circumference is circular, or which has its longitudinal and transverse diameters equal.

OR'BIT, in astronomy, the path of a planet or comet in its course round the sun: thus the earth's orbit is the curve which it describes in its annual revolution, and which is usually called the ecliptic. Modern astronomers consider the orbit of every planet as an ellipse, having the sun in one of its foci, and that they all move in these ellipses by this law, that a radius drawn from the centre of the sun to the centre of the planet always describes equal areas in equal times.——In anatomy, the two cavities under the forehead in which the eyes are situated, are termed *orbits;* and they are set in bony sockets, to maintain and defend the organ of sight and its adjacent parts.

OR'CHESTRA, the space in theatres between the stage and the seats of the spectators. It was appropriated by the Greeks to the chorus and the musicians, by the Romans to the magistrates and senators, and by the moderns to the musicians. The word is also used to denote the whole instrumental band performing together in modern concerts, operas, or sacred music.

ORCHIDE'Æ, in botany, consist of the Orchis, and other plants that resemble it. The flowers are hermaphrodite, and placed at the summit of the stalk, either in a spike, or in a panicle. The flowers of the different species are remarkably various and singular in their shape, resembling different kinds of animals or insects. In the butterfly orchis, the plant has ovate bulbs, tapering to a point at the base; thick fleshy fibres proceed above them from the base of the stem: one of these bulbs is always wrinkled and withered, while the other is plump and delicate: the first is the parent of the stem; the second is the offset, from the centre of which the stem of the succeeding year is destined to rise. Such are the means made use of by nature not only to disseminate plants, but to enable them to change their place, and thus to draw in fresh nourishment.

OR'CINE, in chemistry, the name of the colouring principle of the *lichen dealbatus;* which, after various preparations, assumes a fine rich violet colour.

ORDE'AL, an ancient mode of trial, in which an appeal was made to God to manifest the truth, by leaving nature to its ordinary course, if the accused were guilty; by interposing a miracle, if innocent. This mode of distributing justice in criminal charges prevailed, during the middle ages, throughout almost the whole of Europe; and it is still practised in some parts of the East Indies. In England it existed from the time of the Confessor to that of Henry III., who abolished it by declaration: while it lasted, the more popular modes of resorting to it were those of *fire* (or the hot iron), and of *water;* the former for freemen and people of rank, the latter for peasants. The method of administering the ordeal by fire, in England, was by placing nine red-hot plough-shares in a line, at certain distances from each other, and requiring the person accused to walk over them barefoot and blindfold. If his feet always



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TRIAL BY VARIOUS ORDEALS STILL PREVAILS IN PARTS OF INDIA, AND AMONG SUPERSTITIOUS PEOPLE IT OFTEN DETECTS GUILT BY FEAR.

alighted in the spaces between the shares, so that he passed over them unhurt, his success was deemed a divine assertion of his innocence; if, on the contrary, he was burnt, the disaster was an oracular proof of his guilt. The *ordeal by water* was of two kinds; either by plunging the bare arm to the elbow in boiling water, or by casting the person suspected into a river or pond of cold water, and if he floated without an effort to swim, it was an evidence of guilt, but if he sunk he was acquitted.——*Ordeal by combat*, was when the person accused of murder was obliged to fight the next relation, &c. of the person deceased.—Modes of trial so liable to human collusion, and founded upon unwarranted ideas of the divine providence, have deservedly passed away; but the fact of their former existence remains attested by a form of words still required to be used by a person arraigned for trial. Such a one, in the days of ordeals, had it in his choice to put himself upon God and his country, or upon God alone. In the former case, he professed his readiness to abide the decision of a jury; in the latter he appealed to the ordeal, as to the immediate judgment of God. At present, the prisoner, on pleading "not guilty," and being asked "how he will be tried?" a question which alludes to the choice formerly allowed, is always to answer, "By God and the country;" so that, in reality, the question and reply have now no meaning.

ORDER, in natural history, a subdivision of a class, which is itself farther divided into genera, as these are into species. The orders in the Linnæan system of botany are founded on the number of styles or female organs. They are all expressed by a single term, which is of Greek etymology, and is significant of the character of the *order* to which it is applied.——*Order*, a term used in astronomy, and applied to the motion of a planet. Planetary bodies are said to go *according to the order of the signs*, when the apparent motion is direct, proceeding from Aries to Taurus, thence to Gemini, &c. Their apparent motion is *contrary to the order of signs*, when they seem to go backwards from Pisces to Aquarius, &c.—— The word *order*, in military concerns, is used in a variety of senses; either as to the disposition and arrangement of troops, or in that of command.

ORDERS, or HOLY ORDERS, denote the character and office peculiar to ecclesiastics, whereby they are set apart for the ministry. Since the Reformation, there are three orders of the clergy acknowledged, namely, bishops, priests, and deacons; whence the phrase, "to be in orders," is the same as to be of the clerical order.—— *Religious Orders*, associations, or societies of monastics, bound to lead strict and devotional lives, according to the prescribed rules of their respective communities. An order, in fact, consists in the rules to be observed by those who enter it; thus some orders are more austere than others, and one order dresses in white, while another is habited in gray or black: and synonymous with the expression, "the order of St. Francis," is, "the rule of St. Francis."—— *Military Orders* are societies established by princes, the members of which are distinguished by particular badges, and consist of persons who have done particular service to the prince and state, or who enjoy, by the privileges of birth, the highest distinctions in the state. They originated from the institutions of chivalry and the ecclesiastical corporations, and were, in the beginning, fraternities of men, who, in addition to particular duties enjoined by the law of honour, united for the performance of patriotic or Christian purposes. Free birth and an irreproachable life were the conditions of admission. During the time of the crusades numerous military orders arose, and were an example for all future orders. The oldest of the religious military orders is that of St. John of Jerusalem; and on their model the secular military orders were formed in later times, which united religious with military exercises. But the original pious object of these orders was changed, and they acquired by degrees their present character.——*Orders*, in law, rules made by the court in causes there depending. These orders are made by different courts, as the Chancery, King's Bench, &c.; and also, on particular occasions, orders are made by magistrates at the Sessions.—— *Orders*, in architecture. [See ARCHITECTURE.]

ORDINARY, in general signifies *common*, or *usual*; thus an ambassador or envoy *in ordinary*, is one sent to reside constantly at some foreign court, in order to preserve a good understanding, and watch over the interest of his own nation. This term is also applied to several officers in the royal household, who attend on common occasions, as "a physician or chaplain in ordinary."——*Ordinary*, in the common and canon law, one who has ordinary or immediate jurisdiction. In which sense, archdeacons are ordinaries; though the appellation is more frequently given to the bishop of the diocese, who has the ordinary ecclesiastical jurisdiction.——The *ordinary of Newgate* is a clergyman who is attendant in ordinary upon the prisoners in that gaol, preaches and reads prayers in the chapel, and attends and prays with condemned malefactors at the place of execution.—— *Ordinary*, in heraldry, is that sort of charge in court armour which is proper to the art, and in ordinary use therein, in distinction from common charges, which it has in common with other arts.——The word *ordinary* is also applied to designate a dinner at any inn or place of entertainment, where each person pays a certain fixed price for his meal.

ORDINATION, the conferring holy orders, or initiating a person into the priesthood. In the church of England the first thing necessary on application for holy orders, is the possession of a *title*; that is, a sort of assurance from a rector to the bishop, that, provided the latter finds the party fit to be ordained, the former will

"IF THE FAULTS OF MEN IN ORDERS ARE ONLY TO BE JUDGED AMONG THEMSELVES, THEY ARE ALL IN SOME SORT PARTIES."—DRYDEN.



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take him for his curate, with a stated salary. The candidate is then examined by the bishop, or his chaplain, respecting both his faith and his erudition: and various certificates are necessary, particularly one signed by the clergyman of the parish in which he has resided during a given time. Subscription to the thirty-nine articles is required, and a clerk must have attained his twenty-third year before he can be ordained a deacon; and his twenty-fourth to receive priest's orders.——The ceremony of ordination is performed by the bishop by the imposition of hands on the person to be ordained. In the English church, and in most Protestant countries where the church is connected with the state, ordination is a requisite to preaching; but in some sects ordination is not considered necessary for that purpose, although it is considered proper previous to the administration of the sacraments by the preacher.—— In the presbyterian and congregational churches, *ordination* means the act of settling or establishing a licensed preacher over a congregation with pastoral charge and authority; or the act of conferring on a clergyman the powers of a settled minister of the Gospel, without the charge of a particular church, but with general powers wherever he may be called to officiate.

OR'DINANCE, in law, a temporary act of parliament, not introducing any new law, but founded on some act formerly made; consequently, such ordinances might be altered by subsequent ones.

OR'DINATE, in geometry and conic sections, a line drawn from any point of the circumference of an ellipsis or other conic section, perpendicularly across the axis to the other side.——*Ordinates of a curve*, right lines parallel to each other, terminated by the curve, and bisected by a right line called the diameter.

ORD'NANCE, a general name for artillery of every description.——*Ordnance Office*, or *Board of Ordnance*, an office kept within the Tower of London, which superintends and disposes of all the arms, instruments, and utensils of war, both by sea and land, in all the magazines, garrisons, and forts in Great Britain. The Board of Ordnance is divided into two distinct branches, the civil and the military; the latter being subordinate to, and under the authority of the former.——*Ordnance Debentures*, bills issued by the Board of Ordnance on the treasurer of that office for the payment of stores, &c.

ORES, a general name for metals in an unrefined state, as they are dug out of the earth, where they are found in the four following states: namely, 1. *pure*; that is, by themselves, in a pure metallic state, or as alloys, in combination with other metals; 2. as *sulphurets*, or in combination with sulphur; 3. as *oxydes*, or in combination with oxygen; and 4. as *salts*, that is, in combination with acids. After the metallic ores are drawn from the mine, they in general go through several processes before they are in a state fit for use. Some are first washed in running water, to clean them from loose, earthy particles: they are then piled together with combustible substances, and burned, or roasted, for the purpose of ridding them of the sulphur or arsenic with which they may happen to be combined, and which rises from them in a state of fume and smoke. Thus having been freed from impurities, they undergo the operation of melting, in furnaces constructed according to the nature of the respective metals, or the uses to which they are subsequently applied. Some melt readily of themselves; whereas others are so intractable, that they require the assistance of various fluxes before they will yield the metal. Assayers therefore distinguish ores into fusible, refractory, and infusible. Those are called *fusible* which, either by means of a moderate fire only, or by adding a fit menstruum to them, melt easily, so as to afford the metal or semi-metal contained in them. The *refractory* ores are those which require a very strong and lasting action of the fire, and the addition of proper fluxes, before they will melt. The substances naturally combined with metals, which mask their metallic characters, are chiefly oxygen, chlorine, sulphur, phosphorus, selenium, arsenic, water, and carbonic acid. But some metals, as gold, silver, and platinum, often occur in the metallic state, either alone, or forming native alloys by being in combination with other metals. [See METALS, MINES, &c.]

OR'GAN, an instrument designed for the production of some certain action or operation; in which sense, the mechanic powers, machines, and even the veins, arteries, nerves, muscles, and bones of the human body may be called organs. The *organs of sense* are those parts of the body by which we receive the impressions or ideas of external objects: thus, the ears are the organs of hearing; the nerves are the organs of perception and sensation; and the tongue is the organ of speech ——What is meant by "organic world" comprises the animal and vegetable kingdoms. Minerals are not *organized* bodies. The various gradations of organised being, from man, through all the inferior animals, down to the most humble plant that grows, furnish a most curious and interesting subject of study.

OR'GAN, in music, a wind instrument, of ancient invention, blown by bellows, and containing numerous pipes of various kinds and dimensions, which, for its solemnity, grandeur, and rich volume of tone, is peculiarly fitted for the purposes for which it is commonly employed. Organs are sometimes of an immense size. St. Jerome mentions an organ with twelve pair of bellows, which might be heard at the distance of a thousand paces, or a mile; and another at Jerusalem, which might be heard at the Mount of Olives. The organ in the cathedral church at Ulm, in Germany, is said to be 93 feet high and 28 broad, its largest pipe being 13 inches in diameter, and it having sixteen pair of bellows.—The Greeks called the organ *organum*, to indicate instrumental mu-

MINERAL BODIES ARE CHARACTERISED BY ANGLES, STRAIGHT LINES, AND PLANE SURFACES; BUT ANIMALS BY ROUNDED LINES AND CONVEX SURFACES.

THE ORGAN AT HARLEM IS 108 FT. HIGH, AND 60 FT. BROAD; WITH 4000 PIPES, RESEMBLING COLUMNS OF SILVER, FROM THE GROUND TO THE ROOF.



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THE DIFFERENT STRATA EXHIBIT NO ORGANIC REMAINS TILL WE ASCEND TO LIMESTONE, THE FUNDAMENTAL PRINCIPLE OF ANIMAL ORGANISATIONS.

sic, which, by uniting several pipes, imitated several voices; and to distinguish the organ from other musical instruments, the Romans called it *organum pneumaticum*, an instrument of air. By comparing different authorities, we should conclude that its introduction into Christian churches took place about the ninth or tenth century; and it became very general in England in subsequent times; but during the civil wars they were not only removed from the churches, but were so generally reprobated, that, at the Restoration, there could scarcely be found either organists, organ-builders, or singers.

ORGANIC REMAINS', an appellation given to all those animal and vegetable substances which have been dug out of the earth in a mineralized state. Modern investigations have brought these remains to light, as existing in the greatest variety of forms, in immense quantity, and with the widest possible distribution. The lowest and most level parts of the earth, when penetrated to a very great depth, exhibit strata containing innumerable marine productions. Similar formations compose hills, and even mountains, in which the shells are so numerous as to constitute the main body of the rock; and they are often in such a perfect state of preservation, that the smallest of them retain their most delicate processes. Almost every part of the globe presents the same phenomenon; and, what is at length perfectly established respecting these productions, they differ in specific, and often in generic resemblances, from the shells of the present day; and the differences between the extinct and living shells increase in proportion as we descend through the successive series of deposits that overspread the surface of the earth. Since the commencement of the present century very great progress has been made in the science of geology through the medium of geographical discoveries; for we find certain families of animals pervading strata of every age, and possessing the same generic forms which are to be found among existing animals. There are, however, other families, both animal and vegetable, which are confined to particular formations, where whole groups of these have been annihilated, and have been replaced by others bearing widely different characters. Many controversies have arisen, whether species have existed since the first formation of animals, or whether they were more simply formed at first, and have gradually improved by reproduction, and assumed more enlarged and more perfect forms, with new specific distinctions. On this subject Mr. Lyell thus expresses himself—and the observation is so rational and convincing, that we readily adopt his opinion—"that species have a real existence in nature, and that each was endowed, at the time of its creation, with the attributes and organization by which it is now distinguished." As respects vegetable remains in a fossil state, subterranean collections of bitumenized wood, and other vegetable matter, are found at various depths in different parts of the world. Cannel coal, as well as anthracite, frequently exhibits traces of ligneous texture in its substance, which could have been derived only from wood. The argillaceous ironstone and slates that accompany coal, contain, with remains of many other unknown vegetables, parts of various cryptogamous plants, the recent analogies of which are found only in tropical regions. But we cannot pursue a subject so comprehensive in its range without trespassing far too much on the prescribed limits of our work; and conclude with this general remark—that the discovery of animals peculiar to certain formations, and the general agreement with each other of the fossils of the same formations, have led to the belief that these several formations were the consequences of successive changes effected on the earth's surface; and that the contained fossils are the preserved remains of the several creations which had been successively formed to accord with the state of our planet under its several changes. [See GEOLOGY, FOSSILS, &c.]

ORGANIZA'TION, the act of forming or arranging the parts of a compound or complex body in a suitable manner for use or service. Also the act of distributing into suitable divisions and appointing the proper officers, as an army or a government.

ORGANOL'OGY, an interesting branch of physiology which specially treats of the different organs of animals, but more particularly those of the human species.

OR'GIA, in antiquity, feasts and sacrifices performed in honour of Bacchus, instituted by Orpheus, and chiefly celebrated on the mountains by wild, distracted women, called *bacchæ*.—"These feasts were held in the night; hence the term, "nocturnal orgies." [See BACCHANALIA.]

OR'GUES, in the military art, a machine composed of several musket barrels united, by means of which several explosions are made at once, to defend breaches. Also, long thick pieces of timber, pointed and shod with iron, and hung over a gateway, to be let down in case of attack.

OR'ICHALCH, or ORICHAL'CUM, in antiquity, a metallic substance resembling gold in colour, but very inferior in value. It was known both to the Greeks and Romans; and though it has been a matter of dispute, with philosophers and others, what this metal could be, or how it was procured or made, it is highly probable that it was either the same kind of composition as our brass, or a mixed metal very analogous to it.

ORIENT, in geography and astronomy, the east, or eastern point of the horizon; thus called, because it is the point where the sun rises. Hence the *equinoctial orient* is used for that point of the horizon where the sun rises, when he is in the equator, or enters the signs of Aries and Libra; the *æstival orient* is the point wherein the sun rises in the middle of summer, when the days are longest; and the *hibernal orient*, the point where the sun rises in the middle of winter, when the days are shortest.

IN THE TERTIARY SERIES OF FORMATIONS ARE FOUND NUMEROUS FOSSILS, OF BOTH ANIMALS AND VEGETABLES, WITH PERFECT ORGANISATION.



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ORIENTALS, the natives or inhabitants of the Eastern parts of the world. It is common to give this appellation to the inhabitants of Asia from the Hellespont and Mediterranean to Japan ——An *orientalism* is an idiom of the eastern languages.——An *orientalist*, one versed in the eastern languages and literature.

ORIGENISTS, in the history of the church, followers of Origen of Alexandria, a celebrated Christian father, who held that the souls of men have a pre-existent state; that they are holy intelligences, and sin before they are united to the body, &c.

ORILLON, in fortification, a round mass of earth faced with a wall, raised on the shoulder of those bastions that have casemates to cover the cannon of the retired flank.

ORION, in astronomy, a constellation of the southern hemisphere; consisting of thirty-seven stars, according to Ptolemy; of sixty-two, according to Tycho; and of eighty in the Britannic catalogue.

ORLE, in heraldry, an ordinary forming a border or selvage within the shield, at some distance from the edges.

ORIFLAMME, the old royal standard of France, originally the church banner of the abbey of St. Denis. It was a piece of red taffeta fixed on a golden spear, in the form of a banner, and cut into three points, each of which was adorned with a tassel of green silk.

ORIOLE, in ornithology, a beautiful bird, of which there are several species, well known in the United States of America by the richness of their plumage and the peculiar form of their nests.

ORLOP, in a ship of war, a platform of planks laid over the beams in the hold, on which the cables are usually coiled. It contains also sail-rooms, carpenters' cabins and other apartments.

ORNITHOLOGY, that branch of natural history which treats of birds, describing their structure, form, habits, manners, and other characteristic properties. Those who are skilled in this study are termed *ornithologists*.—The symmetry and beauty displayed in the graceful forms and varied colours of the feathered tribe, and the wonderful adaptation of their structure to their peculiar habits and modes of living, strike the most casual and inattentive observer of nature's works. Every part of their frame is formed for lightness and buoyancy: their bodies are covered with a soft and delicate plumage, admirably calculated to protect them from cold and moisture; their wings, although of the lightest materials, are furnished with muscles of such power as to strike the air with great force, and to impel their bodies forward with astonishing rapidity, whilst the tail acts as a rudder, by which their course can be directed at pleasure. And their internal structure is in perfect consonance with those external peculiarities. The voice of birds is a peculiar gift of nature, by which the greater part are distinguished from all the rest of the animal creation. At the bifurcation of the windpipe is a glottis supplied with appropriate muscles, called the lower or inferior larynx: it is here that the voice is formed; the vast body of air contained in the air-cells contributes to the force, and the windpipe, by its form and movements, to the modification of the voice. The gift of song is given to the male birds only, and their notes are mostly an expression of love; hence they are heard singing chiefly at the time of pairing. To no other creature have such various tones been granted for giving utterance to different feelings; hunger, fear, the dread of imminent danger, desire for society, or longing for his mate, &c., are expressed by a variety of notes, which make a language intelligible not only to birds of the same species, but also to the other tribes. Almost all birds incubate, or hatch their eggs, by keeping them at a uniform temperature by brooding over them; and before laying, they are directed by instinct to the operation of building a nest or habitation for their young; many of which are constructed with such exquisite skill as to exceed the utmost exertion of human ingenuity to imitate them. How assiduously is the work of incubation performed! With what parental care and tenderness are the young watched over and protected, till they are gradually taught to fly, and become qualified to provide for themselves! The whole economy of birds, indeed, is calculated to excite our wonder, and to fill our minds with admiration.—Birds, although the most marked of all the classes of animals, resemble each other so closely in their specific character, that their subdivision is extremely difficult. In the Linnæan system they are arranged, according to the form of their bills, into six orders, viz. 1. *Accipitres*, as eagles, vultures, and hawks. These are a rapacious tribe, feeding on carcasses, however putrid, but, unless pressed with hunger, seldom attacking living animals: they are bold, gregarious, fly slowly, unless when very high in the air; and they have an exquisite sense of smell. 2. *Pice*, as crows, jackdaws, parrrots, &c. These live in pairs; have their nests in trees, and the male feeds his mate while she is sitting: their food is various filthy substances. 3. *Anseres*, as ducks, geese, swans, gulls, &c. These are frequently polygamous: the mother takes little care in providing for their young: they build their nest mostly on the ground: their food fish, frogs, worms, and aquatic plants. 4. *Grallæ*, as herons, woodcocks, ostriches, &c. These have their nest on the ground: they live on marsh animalcules: their legs are naked above the knees; 5. *Gallinæ*, as peacocks, pheasants, turkies, common fowls, &c. The food of these birds consists of grain and seeds, which they scratch from the ground and macerate in the crop: they make their nest on the ground with very little care: they are polygamous, and fond of rolling in the dust. 6. *Passeres*, including sparrows, larks, swallows, &c. This order is divided into the *pure*, or such as feed on grain; and the *impure*, or those that live on insects. They live chiefly in

ALL BIRDS OF THE PASSERINE ORDER LAY FROM FOUR TO SIX EGGS, EXCEPT THE TITMOUSE AND THE WREN, WHICH LAY FIFTEEN OR EIGHTEEN.

THE CLOVEN-FOOTED WATER FOWLS, OR WADERS, GENERALLY LAY FOUR EGGS; DUCKS LAY FROM EIGHT TO TWENTY; DIVERS LAY ONLY TWO EGGS.



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THE CASE WHICH SOCIETY AT LARGE IS BOUND TO TAKE OF DESTITUTE ORPHANS, IS AN IMPORTANT POINT OF POLITICAL ECONOMY.

THE MODE OF MAKING ORIGINATED, ASYLUMS FOR ORPHAN CHILDREN BECAME FREQUENTLY, IN THE

trees and hedges; are monogamous, vocal, and feed their young by thrusting the food down their throats.

OROG'RAPHY, or ÖROL'OGY, the science which describes mountains, with regard to their height and form, their chains, branches, &c. The method of measuring the heights of mountains was formerly by trigonometrical survey; but in modern times it has been usual to ascertain their heights by barometrical observation, as being much more convenient, and sufficiently correct for all practical purposes.——That branch of geology, which investigates the materials of which mountains are composed, is denominated *oryctology*.

OR'NUS, in botany, a species of the *fraxinus*, or ash tree, which produces the manna.

OR'PHAN, a fatherless child or minor; or one that is deprived both of father and mother. The lord-chancellor is the general guardian of all orphans and minors throughout the realm.—In London the lord-mayor and aldermen have the custody of the orphans of deceased freemen, and also the keeping of their lands and goods: accordingly, the executors or administrators of freemen leaving such orphans, are to exhibit inventories of the estate of the deceased, and give security to the chamberlain of London for the orphan's part.

OR'PHEUS, in ichthyology, the name of a fish caught in the Archipelago. It is of a broad and flat figure, and of a fine purple colour; its eyes are large and prominent, its teeth serrated, and it has only one fin on the back. This was the fish anciently so named; but by the modern Greeks, a fish of the *Sparus* species has received the name of Orpheus, and is much esteemed by them as food.

OR'PIMENT, or SUL'PHURET OF AR'SENIC, a mineral powder composed of sulphur and arsenic, sometimes artificially produced, but found also native, and constituting one of the ores of arsenic. It is of two kinds, red and yellow. The native orpiment appears in brilliant, gold-like masses of various sizes, flexible, soft to the touch like talc, and sparkling when broken. The red orpiment is called *realgar*. When crystalized in bright needles, it is called *ruby of arsenic*.

OR'RERY, a curious machine for representing the motions of the heavenly bodies; so called because one, copied from the original invention of a Mr. George Graham, was first made for the earl of Orrery. It consists of representations of the planets, and of the zodiac, and other lines imagined by astronomers. By means of an orrery, persons who have not leisure to study astronomy may, in the space of a few days, obtain a competent knowledge of several of the celestial phenomena, and the motion of the earth; its principal use being to render the theory of the earth and moon intelligible, and to make evident to the senses the causes of those appearances that depend on the annual or diurnal rotation of the earth, and the monthly revolutions of the moon.——Many attempts have been made to produce what are called *transparent orreries*, by means of the magic lantern; but they are, at best, a very imperfect substitute for the mechanical apparatus we are describing. The orrery is sometimes called a *planetarium*; but there is this difference between them, that a planetarium exhibits by wheel-work the periodic or tropical revolutions of the primary planets round the sun, whereas the orrery gives besides the revolutions of the primary planets, the revolutions of some or all of the secondaries, and the rotation of the earth, together with the moon's anomalistic revolution, and her revolution with respect to the retrograde motion of the nodes. Hence the orrery, when constructed on its most comprehensive plan, may be said to comprise within itself the planetarium, the tellarium, the lunarium, and the machine for Jupiter's satellites.

OR'RIS ROOT, the root of a white-flowering species of iris, the *Iris Florentina*, a native of the south of Europe. It is exported from the Mediterranean in considerable quantities, and among other uses is employed in the manufacture of hair-powder, the odour it communicates resembling that of violets.

ORTHODROMICS, in navigation, the art of sailing on the arc of a great circle.

ORTHOG'RAPHY, that part of grammar which teaches the nature and properties of letters, and the proper spelling or writing of words. A correct pronunciation of words is *orthoepy*.——In geometry, the art of drawing or delineating the fore right plan of any object, and of expressing the heights or elevations of each part, as called from its determining things by perpendicular lines falling on the geometrical plan.——In architecture, the elevation or representation of the front of a building.——The *internal orthography*, called also a *section*, is a delineation of a building, such as it would appear if the external wall were removed.——In perspective, the right side of any plane, i. e. the side or plane that lies parallel to a straight line which may be imagined to pass through the outward convex points of the eyes, continued to a convenient length.——In fortification, the profile or representation of a work in all its parts, as they would appear if perpendicularly cut from top to bottom.——*Orthographic Projection of the Sphere*, is that projection which is made upon a plane passing through the middle of the sphere, by an eye placed vertically at an infinite distance.

OR'TIVE, in astronomy, rising, or eastern. The *ortive* amplitude of a planet is an arc of the horison intercepted between the point where a star rises, and the east point of the horison, the point where the horison and equator intersect.

OR'TOLAN (*emberiza hortulana*), in ornithology, a bird about the size of a lark, celebrated in the annals of gastronomy, which visits England previous to the severe weather of winter. It appears to be identical with the *miliaria* of Varro, which was sold at such enormous prices to the epi-



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OXIDE OF OSMIUM BECOMES OF A DARK COLOUR WITH ALCOHOL OR ETHER, AND AFTER SOME TIME SEPARATES IN THE FORM OF BLACK FILMS.

cures of Rome. Their flesh is said to be extremely delicate, but so rich as soon to satiate the appetite. The ortolan is yellow on the throat and round the eyes; the breast and belly are red; and the upper part of the body brown, varied with black.

ORYCTOG'NOSY, that branch of mineralogy which has for its object the classification of minerals according to well ascertained characters, and under appropriate denominations.

ORYCTOG'RAPHY, or ORYCTOL'OGY, that part of natural history which treats of fossils.

OSCILLA'TION, the motion of a propelled body, as a pendulum, when restrained at right angles to the direction of force; the body, in consequence, ascends in a curve, and descending by its own accelerated weight, rises again on the opposite side, continuing this oscillation till the friction of the centre and the air have taken away, or received the original force. The time is the same in the same pendulum, whatever be the length of the oscillation, but in pendulums of different lengths the time is as the square root of the length; thus, a pendulum of 36 inches vibrates but a sixth of the time of one of six inches.——*Axis of oscillation* is a right line passing through the point of suspension parallel to the horizon.——*Centre of oscillation* is that point in a vibrating body in which, if all the matter of the body were collected into it, the vibrations would be performed in the same time as before.

OSCI'NES, in antiquity, an appellation given by the Romans to those birds whose chattering and notes were regarded as omens and predictions. Of this sort were crows, pies, jays, owls, ravens, &c.

OSCHOPHO'RIA, in antiquity, an Athenian festival instituted in honour of Theseus, for his services to his country in destroying the Minotaur.——The *Oschophoria* are supposed by some to have been instituted in honour of Minerva and Bacchus, who assisted Theseus in his enterprise. Others imagine they were in honour of Bacchus and Ariadne.

OSCULA'TION, in geometry, the contact between any given curve and its *osculatory* circle, that is, a circle of the same curvature with the given curve.

OSMAZOME, in chemistry, a peculiar substance, or animal principle obtained from muscular fibre, by evaporation and the aid of pure alcohol.

OSMIUM, a metal not long since discovered, of a dark gray colour, and contained in the ore of platinum. With copper and with gold it forms malleable alloys, which are easily dissolved in nitro-muriatic acid, and afford by distillation the oxyde of osmium. It is insoluble in the acids, readily soluble in potassa, and very volatile. It takes its name from the singular odour of its oxyde.

OS'PREY, or OS'SIFRAGE, (*ossifraga*) in ornithology, the sea-eagle, a fowl of the genus *Falco*, of the size of a peacock. It feeds on fish, which it takes by suddenly darting upon them when near the surface of the water.

OSSIFICA'TION, in medicine, the process of changing from flesh membraneous substances, or other matter of animal bodies, into a bony substance.

OSSILE'GIUM, in antiquity, the act of collecting the bones and ashes of the dead after the funeral-pile was consumed, and which was performed by the friends or near relations of the deceased, who first washed their hands and ungirt their garments. When all the bones were collected, they were washed with wine, milk, perfumes, and the tears of friends; after this ceremony was over, the relics were put into an urn, and deposited in a sepulchre.

OSTEOCOL'LA, a fossil formed by incrustation on the stem of a plant, and consisting of carbonate of lime. It is found in long, thick, and irregular cylindric pieces, either hollow or filled with calcareous earth. It obtained its name from an opinion that it had the quality of uniting fractured bones. ——Also, the name given to glue obtained from bones.

OSTEOL'OGY, that part of anatomy which treats of the bones.

OSTIUM, in antiquity, the mouth or entrance of a harbour, between the arms of the semicircle, which was generally the figure of their harbours.

OSTRACISM, in Grecian antiquity, a kind of popular judgment or condemnation among the Athenians, whereby such persons as had power and popularity enough to attempt anything against the public liberty were banished for a term of ten years. This punishment was called *ostracism*, from a Greek word which properly signifies a shell; but, when applied to this object, it is used for the billet on which the Athenians wrote the names of the citizens whom they intended to banish, which was a piece of baked earth, or a tile, in the form of a shell. If 6000 of the shells deposited in the place appointed were in favour of the banishment of the accused, it took effect; otherwise he was acquitted. After the expiration of ten years, the exiled citizen was at liberty to return to his country, and take possession of his wealth, and all his civil privileges. To this sentence no disgrace was attached; for it was never inflicted upon criminals, but only upon those who had excited the jealousy or suspicion of their fellow-citizens, by the influence they had gained by peculiar merit, wealth, or other causes. Aristotle and Plutarch called ostracism "the medicine of the state."

OSTRACITE, an oyster shell in its fossil state. It is found in many parts of England, and in some places is held in high repute for its efficacy in cases of gravel.

OSTRICH *(struthio)*, in ornithology, a bird distinguished by its immense size and peculiar habits, as well as by the beauty and value of its plumage. The African or true ostrich *(struthio camelus)* is from seven to nine feet high from the top of its head to the ground; most of this, however, is made up by the great length of its neck. Its

"PUBLIC ENVY IS AN OSTRACISM, THAT ECLIPSETH MEN WHEN THEY GROW TOO GREAT; AND THEREFORE IT IS A BRIDLE TO KEEP THEM WITHIN BOUNDS."



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thighs and the sides of the body are naked, and the wings are so short as to be unfit for flying. It inhabits the burning and sandy deserts of Africa in large flocks; and its speed in running exceeds that of the fleetest horse, which renders the ostrich hunter's task exceedingly laborious. The female lays from ten to twelve eggs in a hole in the sand; and, although she does not incubate them continually, no bird has a stronger affection for its offspring, or watches its nest with more assiduity; always brooding over her eggs at night, and only leaving them during the hottest part of the day. The eggs are said to be a great delicacy, and prepared for the table in various ways. The digestive powers of the ostrich appear almost incredible, and its voracity is equal to its digestion. The American ostrich (*struthio rhea*) is a smaller species than the African, but in everything, except the beauty of its plumage, it bears a close resemblance to it.

OTTAR (or ATTAR) of ROSES, the most elegant perfume known, being an aromatic oil obtained from the flowers of the rose, but in such small quantities that half an ounce can hardly be procured from a hundred pounds of the petals. It is brought from Turkey and the East-Indies; and, when genuine, is sold at a most exorbitant price. It is frequently adulterated with oil of sandal wood. Bishop Heber, in his Narrative of Travels and Residence in India; has given the following account of the cultivation and manufacture of this valuable perfume: "Ghasedpore is celebrated throughout India for the beauty and extent of its rose-gardens; the fields occupy many hundred acres; the roses are cultivated for distillation, and for making attar. The price of a sieve, or two pounds weight, a large quart, is eighteen linas, or a shilling. The attar is obtained after the rose-water is made, by setting it out during the night, until sunrise, in large open vessels, exposed to the air, and then skimming off the essential oil which floats on the top. To produce one rupee's weight of attar, 200,000 well grown roses are required. The juice even on the spot is extravagantly dear, a rupee's weight being sold at the bazaar for 8*l.* sterling, and at the English warehouse for 10*l.* Mr. Melville, who made some for himself, calculated that the rent of the land and price of utensils really cost him 5*l.* for the above quantity."

OTTER *(lutra communis)*, in zoology, an amphibious quadruped, remarkably sagacious in the construction of its house under ground. It inhabits the banks of rivers, and feeds principally on fish. The feet are palmated, and the tail is half the length of its body, the fur of which is much esteemed. It is fierce and crafty when attacked, but may easily be tamed when young, and taught to catch fish. When the otter, in its wild state, has taken a fish, it carries it on shore, and devours the head and upper parts, rejecting the remainder. When hunted by dogs, it defends itself very obstinately, often inflicting on them the severest wounds.

——The American otter *(lutra Brasiliensis)* is taken in great numbers in Canada, nearly 20,000 skins having been sent to England in one year by the Hudson's Bay company. Its habits are the same as that of the European species, but it is larger, and the fur much more valuable. The common mode of taking them is by sinking a steel trap near the mouth of their burrow.——The *sea-otter*, which is a much larger species than the others, is about the size of a large mastiff, and weighing about 70 or 80lbs. When in full season the fur is a fine glossy black, and sells at very high prices in China, where the skins are usually taken. It is exclusively found between the 49th and 60th degrees north latitude, and always frequents the coast.

OTTOMAN, an appellation given to what pertains to the Turks or their government; as, the *Ottoman* power or empire. The word originated in Othman, the name of a sultan who assumed the government about the year 1300. The finest countries of the old world have been ruled for five hundred years by the Turks, or Ottomans, a mixed people, composed of Tartars, robbers, slaves, and kidnapped Christian children. Such, alas! are the reverses in the fate of nations, that a horde of barbarian robbers, issuing from the steppes of Northern Asia, have been able to profane with Asiatic despotism the classic soil of Greece, where, 2,500 years ago, the independence of Europe was maintained, and the arts, under the fostering hand of civil freedom, arose and flourished.

OUNCE, in commerce, a weight for different purposes: in Avoirdupois weight, the sixteenth part of a pound; in Troy weight, the twelfth part; in Apothecaries' weight, equal to eight drams.——*Ounce*, in zoology, an animal of the leopard kind, but smaller and milder than the other species.

OUTLAWRY, the putting a man out of the protection of law, or the process by which a man is deprived of that protection. A defendant is outlawed in Great Britain, upon certain proceedings being had, when he does not appear to answer to an indictment or process. On an outlawry for felony, the person forfeits his lands, goods, and chattels. In personal actions, the goods and chattels only are liable; and they are forfeited to the king, with the profits of the lands; for the party being without the law, is incapable of taking care of them himself. In an indictment for treason or felony, an outlawry of the party indicted is equivalent to a conviction. But in the case of either treason or felony, an outlawry may be reversed by writ of error, or plea; and the judgment upon the reversal is, that the party shall be restored to all that he lost, &c.; he must, however, plead to the indictment against him.

OUTRIGGER, a strong beam of timber, of which there are many, fixed on the side of a ship and projecting from it, in order to secure the masts in the operation of careening, by counteracting the strain it suffers from the effort of the careening tackle.



FASHION HAS SET TOO HIGH A VALUE ON THE FEATHERS OF THE OSTRICH TO ADMIT OF HIS REMAINING UNDISTURBED, EVEN IN THE DESERT SANDS.

THE LAW REFUSES BAIL IN SEVERE CHARGES FOR TREASON, MURDER, MANSLAUGHTER, FELONY, AND OUTLAWRY.

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Also, a small boom, occasionally used in the tops, to give additional security to the topmast.

OUTWORKS, in fortification, all those works of a fortress which are situated without the principal wall, within or beyond the principal ditch. They are designed not only to cover the body of the place, but also to keep the enemy at a distance, and prevent his taking advantage of the cavities and elevations usually found in the places about the counterscarp, which might serve them either as lodgments, or as rideaux, to facilitate the carrying on their trenches, and planting their batteries against the place: such are ravelins, tenailles, horn-works, crown-works, &c.

O'VAL, an oblong curvilinear figure, resembling the longitudinal section of an egg. The mathematical oval, which is a regular figure equally broad at each end, and therefore is not strictly egg-shaped, is called an ellipsis.

O'VATE, in botany, egg-shaped, as an *ovate* leaf.——*Ovate-subulate*, having something of the form of an egg and a lance, inclining to the latter.

OVA'TION, in Roman antiquity, a lesser triumph allowed to commanders who had obtained a bloodless victory, or defeated an inconsiderable enemy.

OVERBA'KE, in sea language, an epithet signifying that the waves break in upon a ship lying at anchor; as, the waves *overrake* her, or she is *overraked*.

O'VERT ACT, in law, a plain and open matter of fact, serving to prove a design; distinguished from a secret intention not carried into effect, and even from words spoken; such, in fact, as is to be alleged in every indictment for high treason.

O'VERTURE, in music, a prelude or introductory symphony, chiefly used to precede great musical compositions, as oratorios and operas, and intended to prepare the hearer for the piece which is to follow, often by concentrating its chief musical ideas, so as to give a sort of outline of it in instrumental music.

O'VIDUCT, in natural history, a passage which conveys the egg from the ovary.

O'VINE, pertaining to sheep.

O'VOLO, in architecture, a convex moulding, the section of which is usually the quarter of a circle, and often called the *quarter-round*.

OWL, in ornithology, a nocturnal bird of prey, of the genus *Strix*. Owls are distinguished by having a large head, very large eyes encircled by a ring of fine feathers, and a harsh screeching voice. From the enormous size of the pupils of their eyes, they are enabled to see well in the dark; but in the day, their sense of sight is imperfect; hence, during this time they keep concealed in some secure retreat. Their hearing is very acute, and their plumage soft and loose, enabling them to fly without noise, and thus to come on their prey in an unexpected manner. They breed in fissures of rocks, or in holes of trees, and feed on small birds, mice, bats, &c. There are many species; but the most common is the *barn-owl*, which frequents barns, towers, churches, old ruins, &c., generally leaving its haunts about twilight, and exploring the neighbouring woods for its prey during the night. One very curious species, called the *biscacho*, or *coquimbo*, which is found all over the Pampas of South America, is thus described by Major Head:—"Like rabbits, they live in holes, which are in groups in every direction, and which makes galloping over these plains very dangerous. These animals are never seen in the day; but as soon as the lower limb of the sun reaches the horizon, they are seen issuing from their holes in all directions, which are scattered in groups, like little villages, all over the Pampas. The biscachos, when full grown, are nearly as big as badgers, but their head resembles a rabbit's, except that they have large bushy whiskers. In the evening they sit outside their holes, and they all appear to be moralizing. They are the most serious-looking animals I ever saw; and even the young ones are grey headed, wear mustachios, and look thoughtful and grave. In the day-time, their holes are guarded by two little owls which are never an instant away from their posts. As one gallops by these owls, they always stand looking at the stranger, and then at each other, moving their old-fashioned heads in a manner which is quite ridiculous, until one rushes by them, when fear gets the better of their dignified looks, and they both run into the biscacho's hole."

OWL'ING, so called from its being usually carried on in the night, is the offence of transporting wool or sheep out of England, contrary to the statute.

OX, in zoology, the general designation for the different species of the genus *Bos*; or more strictly, the male of the bovine genus of quadrupeds, castrated and full grown. The common ox *(bos taurus)* has a flat forehead, and round horns placed at the two extremities of a projecting line which separates the front from the occiput: the horns, however, differ so much in their form and direction in the numerous varieties, that no specific character can be based upon them. There is scarcely any part of this valuable animal that is not useful to mankind. Its flesh is the principal article of animal food; the horns are converted into combs, knife-handles, &c.; the bones form a cheap substitute for ivory; the blood is employed in the manufacture of prussian blue; the hair is used by plasterers, and the fat in the formation of candles and soap. Besides the different varieties of the common ox produced by domestication, there are several other varieties, as the Abyssinian ox, having the horns pendulous, adhering only to the skin, and the African ox, having the body snowy, and hoofs black, &c.

OX'ALATE, in chemistry, a salt formed by a combination of the oxalic acid with a base, as the *oxalate of ammonia*.

OXAL'IC ACID, in chemistry, an acid extracted from wood-sorrel, and also from sugar combined with potash. Numerous

OWLS HAVE BEEN COMPARED TO CATS; BOTH CATCH MICE, BOTH FEED WELL UPON FISH, AND BOTH SEE WELL IN THE DARK.

OXALIC ACID BEING VERY COMMONLY PROCURED BY THE ACTION OF NITRIC ACID ON SUGAR, IT IS OFTEN CALLED ACID OF SUGAR.



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other substances, when treated by distillation, afford the oxalic acid; such as honey, gum Arabic, alcohol, the sweet matter contained in fat of oils, the acid of cherries, currants, raspberries, citrons, &c., as well as various animal substances. It forms the juice sold under the erroneous name of *salt of lemons*, which is used for taking out ink spots. Oxalic acid is a violent poison, and has in some cases been taken by mistake for Epsom salts. The immediate rejection from the stomach of this acid by an emetic, aided by copious draughts of warm water containing bicarbonate of potash, or soda, chalk, or carbonate of magnesia, are the proper remedies.

OX'ALIS, in botany, a genus of plants, class 10 *Decandria*, order 5 *Pentagynia*. The species are bulbs, and consist of the different kinds of wood-sorrel.

OX'YDE, OX'YD, OX'IDE, in chemistry, a substance combined with oxygen, without being in the state of an acid. One of the first and most ordinary changes to which metallic substances are subject, is their combination with oxygen. The process is called *oxydation*, and the new substance is an *oxyde*. Some metals are easily oxydated, as iron and tin, and they require to be defended from the action of the air in order to be preserved from *rust*, which is a true oxyde. Others, as gold and platina, scarcely change in any length of time, though ever so much exposed to the atmosphere.

OX'YGEN, or OX'YGEN GAS, in chemistry, a permanently elastic fluid, invisible, inodorous, and a little heavier than atmospheric air. It is the respirable part of air, and was called *dephlogisticated air*, or *vital air*, from its being essential to animal life; but it received its present name from its property of giving acidity to compounds in which it predominates. Oxygen is the most extensively diffused of material substances. In union with azote or nitrogen, it forms atmospheric air, of which it constitutes about a fifth-part. Water contains about 85 per cent. of it, and it exists in most vegetable and animal products, acids, salts, and oxydes. It is also the most energetic, in its chemical agencies, of all the elements of matter, and the history of its properties and combinations forms the most important subject in chemistry. Oxygen gas no where exists pure and uncombined; hence certain processes are required to obtain it in an insulated form: these consist, chiefly, in applying heat to some of its compounds, in which it is retained by a weak attraction. Its most striking property is that of exciting and supporting combustion. A candle or wax taper, freshly extinguished, is relighted on being immersed in a bottle of this gas. A partially kindled piece of charcoal, on being introduced into it, also inflames with great rapidity and brilliancy. But the most interesting combustion in this gas, is that of iron wire, or a watch-spring, which only require to have their temperature excited by the previous burning of a piece of sulphur-match attached to them at the extremity, in order to be kindled into the most vivid and intense combustion, burning with sparks and scintillations, until pieces many inches in length are consumed; and this in a jar of the gas not holding above three pints or a quart. Atmospheric air sustains life only from the oxygen it contains, and is capable of affording to the blood; but *pure* oxygen proves too highly stimulating for animal existence; and it accordingly appears that it is owing to the proportion in which it is mixed in our atmosphere, that it becomes precisely adapted to the support of life.

OX'YGON, in geometry, a triangle having three acute angles.

OX'Y-IODINE, in chemistry, a compound of the chloriodic and oxiodic acids.

OX'YMEL, a syrup made of honey and vinegar boiled together, which possesses aperient and expectorating virtues, and is used in asthmatic affections.

OXYMO'RON, a rhetorical figure, in which an epithet of a quite contrary signification is added to a word; as, *tender cruelty*.

OXYMURIAT'IC ACID, in chemistry, the name by which *chlorine* was formerly known.

OXYO'PIA, the faculty of seeing more acutely than usual. The proximate cause is a preternatural sensibility of the retina; and it has been sometimes known to precede the gutta serena.

OYER AND TERMINER, in law, a court by virtue of the king's commission, to hear and determine all treasons, felonies, and misdemeanours.

O YES, in law, corrupted from the French "*oyez*, hear ye;" the expression used by the crier of a court, in order to enjoin silence when any proclamation is made.

OYSTER, in ichthyology, a well-known bivalvular edible shell-fish, belonging to the genus *ostrea*. In many places oysters are *planted*, as it is called; that is, large artificial beds are formed in favourable situations, where they are permitted to fatten and increase. They attain a size fit for the table in about a year and a half, and are in their prime at three years of age. Many curious discussions have arisen as to whether oysters possessed the faculty of locomotion. It has been generally believed that they are not endowed with any powers of changing their position; but from late observations and experiments of naturalists, however, it appears that they can move from place to place by suddenly closing their shells, and thus ejecting the water contained between them with sufficient force to throw themselves backward, or sideways.—The oysters of the British coasts have long been admitted to be the best procurable in Europe. Those found near Milton, in Kent, and usually called the "native" oysters, are perhaps the very best: they are small, round, plump, and white, with thin shells, which are easily opened. The oysters found in the river Colne, on which stands the city of Colchester, in Essex, are also of excellent quality, and are renowned over the whole island.



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The Colu forms a great many arms and creeks exceedingly well suited for the formation of oyster banks. The Dorsetshire oysters rank next in estimation to those of Essex. Those of Poole, especially, hold a high reputation, as do those also of Faversham, in Kent, of the Isle of Wight, and of Tenby, on the coast of South Wales. In London, during the proper seasons, the trade in oysters is very considerable, both for exportation into the country and native consumption. The dealers bestow great pains in preserving and feeding the oysters in tubs, containing an infusion of salt water and a little oatmeal. Besides those on the English shores, oyster-banks are common on the northern coasts of Ireland; and the Scottish capital has been, till a recent period, plentifully supplied with good oysters from the frith of Forth, in its immediate vicinity. Oysters were esteemed as a great delicacy by the Roman epicures, and were generally eaten at the beginning of the entertainment. It appears that in those days the coast of Kent was as famous for their production as at present, the Romans generally fetching them from Sandwich.—The *shell* of the oyster is composed of carbonate of lime and animal matter, and was, at one time, supposed to possess peculiar medicinal properties; but analysis has shown that the only advantage of these animal carbonates of lime over those of the mineral kingdom arises from their containing no admixture of any metallic substance.

OZÆ'NA, in medicine, an ulcer situated in the nose, discharging a fetid purulent matter, and sometimes accompanied with caries of the bones.

# P.

P, the sixteenth letter and twelfth consonant of the English alphabet, is a labial articulation, formed by expressing the breath somewhat more suddenly than in emitting the sound of *b*. When *p* stands before *t* or *s*, it is mute, as in the words *psalm*, *psychology*, *ptarmigan*, &c.; and when before *h*, those two letters thus united have the sound of *f*, as in *philosophy*. As an abbreviation, in Latin words, P. stands for *Publius*, *pondo*, &c.; PA. DIG. for *Patricia dignitas*; P. C. for *Patres Conscripti*; P. F. for *Publii filius*, and *Publius Fabius*; P. M. for *Pontifex Maximus*; P. P. for *propositum*, or *propositum publice*; P. R. for *Populus Romanus*; PR. S. for *Prætoris sententia*; and PRS. P. for *Præses provinciæ*.——In astronomy, for *post*, as P.M. *post meridiem*, afternoon.——Among physicians, for *partes*, as P. Æ. *partes æquales*, equal parts of the ingredients; *ppt.* for *præparatus*, prepared, &c.——In law, for Parliament, as M.P *member of parliament*.——In music, *p* stands for *piano*, or softly; *pp.* for *pin piano*, or more softly; and *ppp.* for *pianissimo*, or very softly.

PAB'ULUM, the food of plants, chiefly carbon combined with the gases, and forming salts, oils, &c.——In medicine, such parts of our common aliments as are necessary to recruit the animal fluids.——Also fuel, or that which supplies the means of combustion.

PA'CA, in zoology, a small animal of America, bearing some resemblance both to a hare and a pig. It is sometimes called the *spotted cavy*.

PACA'LIA, a feast among the Romans in honour of the goddess Pax, or Peace, who was worshipped as a deity with great solemnity, and honoured with an altar and a magnificent temple.

PACCAN', in botany, an American tree, and its nut or fruit.

PACE, the space between the two feet of a man in walking, usually reckoned two feet and a half; but the geometrical pace is five feet, or the whole space passed over by the same foot from one step to another; and 60,000 such paces make one degree of the equator.——In a general sense the word may be applied to any mode of stepping; as the *pace* of that horse is excellent; your *pace* is quicker than mine, &c.

PACHA', or PASHAW', the military governor of a Turkish province. The most distinguished of them have three horsetails carried before them; the inferior, two. Though the pacha is appointed and removed at the will of the sultan, his power is very great, and the provincial administration is in his hands. This word is also written *bashaw*.

PACHYDERMA'TA, in zoology, a large class of animals, which, according to Cuvier, comprehends all the hoofed quadrupeds that do not ruminate; as the elephant, mastedon or North American mammoth, hippopotamus, rhinoceros, tapir, and hog.

PACI'FIC, the appellation given to the ocean situated between America on the west, and Asia; so called on account of its *supposed* exemption from violent tempests.



PAC'TIO, among the Romans, was a temporary cessation from hostilities; a truce or league for a limited time. It differed from *Fœdus*, which was a perpetual league, and required one of those heralds called *Feciales*, to confirm it by solemn proclamation; neither of which conditions were necessary in the truce called *Pactio*.

PA'CO, or PACOS, in zoology, an animal of South America, resembling the camel in shape, but much smaller. It is sometimes



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called the *Peruvian sheep*, on account of its long thick hair.

PAD'DOCK-PIPE, in botany, a plant of the genus *Equisetum*.

PAD'DOCK STOOL, in botany, a plant of the genus *Agaricus*; vulgarly called *toad-stool*.

PAD'ISHAH, a title assumed by the Turkish sultan. Formerly the Ottoman Porte applied that name only to the king of France, calling the other European sovereigns *kural*; but it has since been applied to other foreign princes of Europe.

PÆAN, among the ancients, a song of rejoicing in honour of Apollo, chiefly used on occasions of victory and triumph. Such songs were named Pæans, because the words *Io Pæan!* frequently occurred in them, which alluded to Apollo's contest with the serpent.——*Pæan*, in ancient poetry, a foot of four syllables, of which there are four kinds, the *pæan primus, secundus, &c.*

PÆDOTHY'SIA, the inhuman custom of sacrificing children, which prevailed among the heathens.

PÆONY *(paonia)*, in botany, a genus of plants belonging to the natural family *ranunculacea*, distinguished for the size and magnificence of the flowers. The species are mostly herbaceous, having perennial, tuberose roots, and large leaves. The flowers are solitary, and of a crimson, purplish, or sometimes white colour. The ancients attributed many wonderful properties to this plant, but it has long since lost all such reputation.——The tree-pæony (called by the Chinese *mou-tan*) is cultivated in that country with great care, and many varieties of it are produced, of all colours.

PAGANA'LIA, in antiquity, certain festivals observed by the Romans in the month of January. They were instituted by Servius Tullius, who appointed a certain number of villages *(pagi)*, in each of which an altar was to be raised for annual sacrifices to their tutelar gods, at which all the inhabitants were to assist, and give presents in money according to their sex and age, by which means the number of country-people was known.

PA'GANISM, the religion of the heathen world, in which the Deity is represented under various forms, and by all kinds of images or idols; it is therefore called idolatry or image worship. The theology of the pagans was of three sorts, fabulous, natural, and political or civil. The first treats of the genealogy, worship, and attributes of their deities, who were for the most part the offspring of the imagination of poets, painters, and statuaries. The natural theology of the pagans was studied and taught by the philosophers, who rejected the multiplicity of gods introduced by the poets, and brought their theology to a more rational form. The political or civil theology of the pagans was instituted by legislators, statesmen, and politicians to keep the people in subjection to the civil power. This chiefly related to their temples, altars, sacrifices, and rites of worship.——The word *pagan* was originally applied to the inhabitants of the country, who on the first propagation of the Christian religion adhered to the worship of false gods, or who refused to receive Christianity after it had been received by the inhabitants of the cities. In the middle ages, this name was given to all who were not Jews or Christians, theirs being considered the only true religion; but in more modern times, Mohammedans, who worship the one supreme God of the Jews and Christians, are not called *pagans*. We also find in some religions of paganism (for example, with Zoroaster, Plato, and Socrates) pure and elevated notions, and precepts of morality which would not disgrace even those of Christianity.

PAGE, a sort of servant of honour. The pages in the royal household are various, and have various offices assigned them; as pages of honour, pages of the presence-chamber, and pages of the back-stairs.

PAGO'DA, a Hindoo place of worship, divided, like our churches, into an open space, a place for worship, and an interior or chancel. The most remarkable pagodas are those of Benares, Siam, Pegu, and particularly that of Juggernaut, in Orissa. In the interior of these buildings, besides altars and statues of the gods, there are many curiosities. The statues, which are likewise called *pagodas*, and which are often numerous, are usually rude images of baked earth, richly gilt, but without any kind of expression.——Pagoda is also the name of a gold or silver coin current in Hindostan, of different values in different parts of India, from 8*s.* to 9*s.* sterling.

PA'GODITE, a name given to the mineral of which the Chinese make their pagodas. It is called also *lardite, koreite*, and *agalmatolite*.

PAIN, an uneasy sensation in animal bodies, arising from some accident in the nerves, membranes, muscles, vessels, &c. of the body. Thus violent pressure or stretching of a limb gives pain; inflammation produces pain; wounds, bruises, and incisions give pain. It may be said, indeed, that all pain proceeds from some injury done to the parts affected; and, according to Galen, it proceeds either from a sudden alteration of the part, or a new temperament suddenly induced.——*Mental pain* may also arise from numerous causes: disquietude, anxiety, apprehension for the future, grief or sorrow for the past, &c. may each give mental pain, as all who have passed through the fiery ordeals of life by sad experience know.

PAINS AND PENALTIES, in law, an act of parliament to inflict pains and penalties beyond or contrary to the common law, in the particular cases of great public offenders.

PAINTING, the art of representing objects in nature, or scenes in human life, with fidelity and passion. It was coeval with civilization, and practised, with success by the Greeks and Romans; obscured for many centuries, but revived in Italy in the 15th century, where it produced the Roman, Venetian, and Tuscan schools; afterwards, the German, Dutch, Flemish, French, and Spanish schools; and, finally,

IN CONDENSED AIR THE ELECTRIC SPARK IS BRIGHT AND WHITE; IN RAREFIED AIR IT IS PALE AND OF A REDDISH TINGE.

THE RAYS OF HEAT, LIKE CLOTHING, PENETRATE THE TEMPERATURE NECESSARY TO FOOD MORE EASILY THAN LIGHT DOES, AND MORE QUICKLY ESCAPING.

the English school, which equals, and bids fair to transcend them all, in correctness of drawing, effect of colouring, and taste of design. It is distinguished into historical painting, portrait painting, landscape painting, animal painting, marine painting, &c.; and as regards the form and the materials, into painting in oil, water colours, fresco, miniature, distemper, mosaic, &c.——Historical painting is the noblest and most comprehensive of all branches of the art; for in that the painter vies with the poet, embodying ideas, and representing them to the spectator. He must have technical skill, a practised eye and hand, and must understand how to group his skilfully executed parts so as to produce a beautiful composition; and all this is insufficient without a poetic spirit which can form a striking conception of an historical event, or create imaginary scenes of beauty. The following rules of criticism in painting have been laid down:—1. The subject must be well imagined, and, if possible, unproved in the painter's hands; he must think well as an historian, poet, or philosopher, and more especially as a painter, in making a wise use of all the advantages of his art, and in finding expedients to supply its defects. 2. The expression must be proper to the subject, and the characters of the persons; it must be strong, so that the dumb-show may be perfectly and readily understood; every part of the picture must contribute to this end; colours, animals, draperies, and especially the attitudes of the figures. 3. There must be one principal light, and this and all the subordinate ones, with the shadows and reposes, must make one entire and harmonious mass; while the several parts must be well connected and contrasted, so as to make the whole as grateful to the eye as a good piece of music to the ear. 4. The drawing must be just; nothing must be out of place, or ill-proportioned; and the proportions should vary according to the characters of the persons drawn. 5. The colouring, whether gay or solid, must be natural, and such as delights the eye, in shadows as well as in lights and middle tints; and the colours, whether they are laid on thick, or finely wrought, must appear to have been applied by a light and accurate hand. 6. Nature must be the obvious foundation of the piece; but nature must be raised and improved, not only from what is commonly seen to what is rarely met with, but even yet higher, from a judicious and beautiful idea in the painter's mind.

PAIR, two things of a kind, similar in form, applied to the same purpose, and suited to each other or used together, as, a pair of gloves; or two similar parts that compose one whole, or a set of things joined to make another complete, &c.——*Pair*, in anatomy, an assemblage, or conjugation of two nerves, which have their origin together in the brain, or spinal marrow, and thence are distributed into the several parts of the body, the one on one side, and the other on the other side.

PAL'ACE, a magnificent house in which a sovereign or other distinguished person resides; as a royal palace; a pontifical palace; a ducal palace.

PAL'ACE-COURT, a court in England which administers justice between the domestic servants of the crown. It is held once a week before the steward of the household and knight-marshal; its jurisdiction extending twelve miles in circuit from the royal palace.

PAL'ADIN, a name formerly given to the knights-errant, who travelled from place to place to give proofs of their valour and their gallantry; extolling their own mistresses as unrivalled in beauty, and compelling those who refused to acknowledge the truth of their panegyrics to engage with them in mortal combat. Of this kind the most famous were Amadis of Gaul and the brave Roland or Orlando.

PALANQUIN', or PALANKEEN', a sort of litter or covered carriage, used in the East Indies, and borne on the shoulders of four porters, called *coolies*, eight of whom are attached to it, and who relieve each other. They are usually provided with a bed and cushions, and a curtain, which can be dropped when the occupant is disposed to sleep. The motion is easy, and the travelling, in this way, is safe and rapid.

PAL'ÆSTRA, in Grecian antiquity, a public building, where the youth exercised themselves in wrestling, running, playing at quoits, &c. Some say the *palæstra* consisted both of a college and an academy, the one for exercises of the mind, the other for those of the body; but most authors describe the palæstra as a mere academy for bodily exercises.

PALÆOG'RAPHY, a description of ancient writings, inscriptions, characters, &c.

PALA'RIA, in antiquity, an exercise performed by the Roman soldiers, to improve them in all their necessary manœuvres.

PAL'ATE, in anatomy, the roof or upper and inner part of the mouth. The glands in this part of the mouth secrete a mucous fluid, which lubricates the mouth and throat and facilitates deglutition.——*Ossa palati*, are two bones situated in the posterior part of the arch of the palate, between the pterygoide apophysis, and the ossa maxillaria, and running up on the sides of the nasal fossæ all the way to the bottom of each orbit. Their uses are first to form the palate, the orbit, and the maxillary sinus; secondly, to sustain the membrane of the palate, and uvula; and thirdly, to assist in the modulation of the voice.

PAL'ATINE, an epithet applied originally to persons holding an office or employment in the palace of the sovereign; hence it imports—possessing royal privileges, as the counties *palatine* of Lancaster, Chester, and Durham, which have particular jurisdictions.——On the continent a *palatine*, or *count palatine*, is a person delegated by a prince to hold courts of justice in a province, or one who has a palace and a court of justice in his own house. All the princes of the German empire were originally ser-

ANALYSIS ACT OF PALLADIUM WHEN IN THE METALLIC STATE; THE CONTACT OF ACIDS, HOWEVER, CONSIDERABLY PROMOTES THEIR ACTION.

vants of the imperial crown. In course of time they acquired independent authority, and secured that authority to their heirs: among these was the count-palatine, or of the palace, in the German language denominated the *pfalzgraf*. This officer was a president who decided upon appeals made to the emperor himself, from the judgment of provincial courts. All titles, except that of lord, which is complimentary, and belonged to territory, were originally official, as are those of judge, general, &c. at this day. When Charlemagne had extended the German empire, he sent persons to administer government in the provinces, under the title of dukes; officers, probably, whose duty was partly military, whence their denomination, which is synonymous with that of leaders, or generals; under the dukes, justice was distributed in each district of the province by a *comes*, count or earl, called in the German *graf*, and in the Saxon and English, *gerefa*, *greve*, *rere*, or *sheriff*; from these courts lay the appeals already mentioned.

PALE, a little pointed stake or piece of wood, used in fencing, inclosing, &c.—— The *pale* was an instrument of punishment and execution among the ancient Romans, and still continues so among the Turks. Hence, *empaling*, the passing a sharp pale or stake upwards through the body.—— *Pale*, in heraldry, one of the honourable ordinaries of an escutcheon; being the representation of a pale or stake placed upright.

PALEA'CEOUS, in botany, an epithet for chaffy, or resembling chaff; as, a paleaceous pappus.

PALEOL'OGY, a discourse or treatise on antiquities, or the knowledge of ancient things.

PALISA'DES or PALISA'DOES, in fortification, an enclosure of stakes, or posts sharpened and set firmly in the ground, used to fortify the avenues of open forts, &c. They were sometimes so ordered that they would turn up and down as occasion required, and might be hidden from the view of the enemy until he came to the attack.

PAL'INDROME, in composition, a verse or line which reads the same either forwards or backwards; *e. g.* that which is put in the mouth of Satan—*Signa te, signa, temere me tangis et angis* (cross thyself, cross thyself, you touch and torment me in vain); or, *Roma tibi subito motibus ibit amor*.

PALINGENE'SY, a term used by entomologists to designate the transitions from one state into another, observed with insects, and in each of which the insect appears in a totally different form. It is Greek for *regeneration*.

PAL'INODE, or PAL'INODY, a recantation, particularly a poetical one, of any thing dishonourable or false uttered against another person.

PALISSE', in heraldry, a bearing like a range of palisades before a fortification, represented on a fesse, rising up a considerable height, and pointed at the top, with the field appearing between them.

PALL, in heraldry, a kind of cross representing the *pallium*, or archiepiscopal ornament sent from Rome to the metropolitan bishops.

PAL'LA, in antiquity, a long kind of mantle or upper garment worn by the Roman females, part of which was thrown over the left shoulder, and held fast under the arm. Tragic actors also wore the *palla*.

PALLA'DIUM, a Trojan statue of the goddess Pallas, which represented her as sitting with a spear in her right hand, and in her left a distaff or spindle. On this statue the fate of the city was supposed to depend; for while they retained this sacred image, it had been given out it was believed Troy would be invincible. Hence anything that affords effectual protection and security is by us deemed a *palladium*; as, the trial by jury is the palladium of our civil rights.—— *Palladium*, in mineralogy, a metal found in very small grains, of a steel gray colour and fibrous structure, associated with platina ore or found in auriferous sand. It is infusible by ordinary heat, and when native is alloyed with a little platina and iridium. It is ductile and very malleable; in hardness superior to wrought iron, and possessed of a specific gravity of 11·8. On exposure to a strong heat, its surface undergoes a tarnish, and becomes blue; but if touched, while hot, with a small piece of sulphur, it runs like zinc.

PAL'LET, among painters, a little oval tablet of wood or ivory, on which a painter places the several colours he has occasion to use. The middle serves to mix the colours on, and to make the tints required. It is held by putting the thumb through a hole made at one end of it.——Among potters, crucible makers, &c. a wooden instrument for forming, heating, and rounding their works.——Among gilders, a tool for taking up the gold leaf from the cushion, and to apply and extend them.——Among mariners, a partition in a hold.——In heraldry, the diminutive of the *pale*, being one half of its breadth.

PAL'LETS, in mechanics, levers in clocks and watches, connected with the pendulum or balance, which receive the immediate impulse of the wheel.

PAL'LIUM, an upper garment or mantle worn by the Greeks, as the *toga* was by the Romans. Each of these was so peculiar to the respective nations, that *Palliatus* is used to signify a Greek, and *Togatus* a Roman.——*Pallium*, or *Pall*, also the woollen mantle which the Roman emperors were accustomed, from the fourth century, to send to the patriarchs and primates of the empire, and which was worn as a mark of ecclesiastical dignity. Since the 12th century it has consisted of a white woollen band or fillet, which is thrown over the shoulders outside of the sacerdotal vestments; one band hanging over the back, and another over the breast, and both ornamented with a red chaplet.

PALL-MALL, or PALLE MAILLE, an

THE PRICE OF PALLADIUM IS ABOUT SIX TIMES THAT OF GOLD; IT IS WHEN MORE COMMON IT MIGHT BE USED IN VARIOUS KINDS OF JEWELLERY.



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LINNÆUS THOUGHT THAT THE COUNTRIES OF PALMS WERE THE FIRST ABODES OF OUR SPECIES, AND THAT MAN IS ESSENTIALLY PALMIVEROUS.

ancient game, in which an iron ball was struck with a mallet through a ring or arch of iron. It was formerly practised in St. James's Park, and gave its name to the street called Pall-Mall, (pronounced Pell-Mell).

PALM, in botany, the name of many species of plants, but particularly of the date-tree or great palm, a native of Asia and Africa. The *palms* are the pride of tropical climates, and contribute greatly to give a peculiar and imposing character to the vegetation of those regions. Their straight and lofty branching trunks, crowned at the summit by a tuft of large radiating leaves or fronds, gives them an aspect entirely unique, and far surpassing that of other trees in majesty. They belong to the monocotyledonous division of plants, and have their parts arranged in threes, or one of the multiples of that number. The calyx has six divisions; the stamens are six in number; and the fruit consists of a berry or drupe, composed of a substance sometimes hard and scaly, but more often fleshy, or fibrous, surrounding a one-seeded nut. Though sometimes growing to a very great height, in other species the stem rises only a few inches above the surface of the ground. Among the most useful of the palms may be mentioned the cocoa-nut, the sago, and the date, the last of which sometimes grows to the height of 100 feet.——In Congo the natives are very expert in making wine of the juice of the palm. At certain times of the year they ascend the trees by the help of a hoop, and when they perceive a flower blown, they cut it off with a knife and fasten the point of the cut stalk into a calabash, called a *capasso*. It remains suspended in that way for a short time, and on being taken down is found full of a liquor as white as whey, which is fermented, and drunk in three days. The fermented juice of the palmira tree also forms the wine of India. In many parts this tree grows spontaneously; in others it is cultivated with great care. When planted in a fertile soil, and of 30 years' growth, it yields *cells* or palm-wine. Previous to the bursting of the membrane which covers the flowering branch, called by botanists the spatha, or spadix, the workman mounts the tree by means of a strap passed round his back, and a rope round his feet, and bruises the part between two flat pieces of stick; this is done for three successive mornings, and on each of the four following, he cuts a thin slice from the top to prevent the spatha from bursting. On the eighth morning a clear sweet liquor begins to flow from the wound, which is then collected. But this exudation, if continued for three years, will kill the trees. ——*Palm*, an ancient long measure, taken from the extent of the hand. The *great palm*, or length of the hand, was equal to about eight inches and a half; the *small palm*, or breadth of the hand, about three inches. The *modern palm* is different in different places.——*Palm*, the broad triangular part of an anchor at the end of the arms.

PAL'MÆ, the 25th class of the Linnæan system of plants, consisting of trees and shrubs, with a stem, bearing leaves at the top, being the most magnificent specimens of the vegetable kingdom.

PAL'MATED, something resembling the shape of the hand: thus, in botany, we say *palmated* leaves, roots, stones, &c.

PALM'ER, a pilgrim bearing a staff; or one who returned from the Holy Land, bearing branches of palm: he was distinguished from other pilgrims by his profession of poverty, and living on alms as he travelled.

PALMET'TO, or CABBAGE-TREE, in botany, a species of palm growing in the southern states of America, and attaining the height of forty or fifty feet. The summit of the stem is crowned with a tuft of large palmated leaves, varying in length and breadth from one to five feet, and supported on long foot-stalks, which give it a beautiful and majestic appearance. Before these leaves are developed, they are folded like a fan; at their base and in the centre of the stem are three or four ounces of a white, compact, and tender substance, which is eaten with oil and vinegar, and somewhat resembles the cabbage in taste, but is neither highly nutritious nor particularly agreeable, and, moreover, is attended with the death of the tree. The wood, though extremely porous, has been found peculiarly suitable for the construction of forts, as it closes, without splitting, on the passage of a ball.

PAL'MIPEDES, in ornithology, web-footed birds.

PALM'ISTRY, a mode of telling fortunes by the lines of the hand; a trick of imposture much practised by gypsies.

PALM-OIL TREE, a tree of South America, from the kernels of whose fruit a rich oil is obtained.

PALM SUN'DAY, the sixth Sunday in Lent, the next before Easter, commemorative of our Saviour's triumphal entrance into Jerusalem, when palm branches were strewed in the way.

PALM'-WORM, in entomology, an insect in America, about twelve inches long, and extremely swift in its motion, having an incredible number of feet, and two claws at the head and tail, with which it wounds and poisons persons, though not fatally.

PAL'SY, or PARAL'YSIS, in medicine, a nervous disease, known by the loss or defect of the power of voluntary muscular motion in the whole body, or in a particular part. It appears under different forms: it may be a loss of the power of motion without a loss of sensation, or a loss of sensation without loss of motion, or a loss of both. Sometimes it attacks the whole system; at others, it affects one side of the body, when it is called *hemiplegia*; and at other times a single member only is affected. A paralysis of the vital organs is attended with immediate death.

PA'LY, or *paleways*, in heraldry, is when the shield is divided into four or more equal parts, by perpendicular lines from top to bottom.

"BROAD O'ER HER HEAD THE VERDANT CEDARS WAVE; AND HIGH PALMYRUS LIFT THEIR GRACEFUL SHADE."——THOMSON.



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PAM'PEROS, violent winds so called, which come from the west or south-west, and, sweeping over those vast plains, or *pampas*, in the southern parts of Buenos Ayres, often do much injury on the coasts.

PANA'DA, or PANA'DO, a diet consisting of bread boiled in water to the consistence of pulp and sweetened

PANATHENÆ'A, in Grecian antiquity, an ancient Athenian festival, in honour of Minerva, who was the protectress of Athens, and called *Athena*. There were two solemnities of this name, one of which was called the *greater panathenæa*, and celebrated once in five years. These were distinguished from the *less* (which were celebrated every third year) not only by their greater splendour and longer continuance, but particularly by the solemn procession, in which the *peplus*, a sacred garment, consecrated by young virgins, and made of white wool, embroidered with gold, was carried from the Acropolis into the temple of the goddess, whose ivory statue was covered with it. This festival was so holy, that criminals were released from the prisons on the occasion of its celebration, and men of distinguished merit were rewarded with gold crowns.

PANCRA'TIUM, among the ancients, a kind of exercise, which consisted of wrestling and boxing. In these contests it was customary for the weaker party, when he found himself pressed by his adversary, to fall down, and fight rolling on the ground.

PAN'CREAS, in anatomy, a flat glandular viscus of the abdomen; in animals called the *sweetbread*. It secretes a kind of saliva, and pours it into the duodenum.

PAN'DECTS, the name of a volume of the civil law, digested by order of the emperor Justinian.

PAN'DIT, or PUN'DIT, a learned Brahmin; or one versed in the Sanscrit language, and in the sciences, laws, and religion of the country.

PAN'EL, in law, a schedule or roll of parchment on which are written the names of the jurors returned by the sheriff. *Impanelling* a jury, is returning their names in such schedule.——*Panel*, in joinery, a square of thin wood, framed or grooved in a large piece between two upright pieces and two cross pieces, as the *panel* of a door.

PAN'IC, an ill-grounded terror inspired by the misapprehension of danger. The origin of the word is said to be derived from Pan, one of the captains of Bacchus, who with a few men routed a numerous army, by a noise which his soldiers raised in a rocky valley favoured with a great number of echoes. Hence all ill-grounded fears have been called *panic* fears.

PAN'ICLE, in botany, a sort of inflorescence, in which the flowers and fruits are scattered on peduncles variously subdivided, as in oats, and some of the grasses.

PAN'ICUM, in botany, a genus of plants, class 3 *Triandria*, or 2 *Digynia*. The species are annuals, and consist of various kinds of panic-grass.

PAN'NAGE, in law, the feeding of swine upon *mast* in woods; also the money paid for the license of having pannage.

PANNIC'ULUS CARNO'SUS, in comparative anatomy, a robust fleshy tunic, situated in beasts between the tunic and the fat; by means of which they can move their skin in whole or part: it is altogether wanting in the human frame.

PANORA'MA, a circular picture on a very large scale, fixed around a room particularly constructed for the purpose, so that from the centre a spectator may have a complete view of the objects represented. This very ingenious and beautiful contrivance was invented, in 1787, by Mr. Robert Barker, an Englishman, and may be considered as the triumph of perspective. The artist, from a high point, must take an accurate plan of the whole surrounding country, as far as the eye can reach. Truth of representation and closeness of imitation are the great objects to be aimed at in panoramas, and the delusion must be promoted by the manner in which the light is admitted. The *diorama* was invented in France, and differs from the panorama chiefly in being flat instead of circular, and therefore presenting only a particular view, like any other painting, in front of you, and not all around. [See DIORAMA.]

PANTALOON', a species of close long trowsers extending to the heels, said to have been introduced by the Venetians. It has been remarked that the Irish very anciently wore trowsers of this description; and that Louis XIII. is the first who appears with what we now call *breeches*.——A buffoon in pantomimes.

PANTHE'A, in antiquity, statues composed of the figures or symbols of several divinities.

PAN'THEISM, a philosophical species of idolatry which maintains that the universe is the supreme God.—Some persons, however, have also applied the word *pantheism* to that doctrine of theology according to which God's spirit not only pervades every thing, but every thing lives through him and in him, and there is nothing without him (*Acts* xvii. 27 et seq.; *Ephes.* iv. 6).

PANTHE'ON, in Roman antiquity, a temple of a circular form, dedicated to all the heathen deities. It was built on the *Campus Martius*, by Agrippa, son-in-law to Augustus; but is now converted into a church and dedicated to the Virgin Mary and all the martyrs. It is, however, called the *rotunda*, on account of its form, and is one of the finest edifices in Rome. The well-preserved portico seems to be of a later period than the temple itself; it consists of sixteen columns of oriental granite, each of which is 15 feet in circumference. The interior was formerly adorned with the most beautiful statues of the various deities, but they were removed by Constantine to Constantinople; at present there are in the eight niches, eight fine columns, placed there by the emperor Adrian. What is very remarkable, and shows the alteration which has taken place at Rome, is, that the entrance is now twelve steps below, though

THE EARLIEST GRECIAN PANTHEIST OF WHOM WE READ WAS ORPHEUS, WHO CALLED THE WORLD THE BODY OF GOD, AND ITS SEVERAL PARTS HIS MEMBERS.

RUINS OF A MAGNIFICENT PANTHEON, WHICH ADRIAN CAUSED TO BE BUILT AT ATHENS, ARE STILL EXTANT: IT WAS SUPPORTED BY 120 COLUMNS.



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THE COMBINATION OF FLEXIBLE FIBRES BY WHICH PAPER IS PRODUCED, DEPENDS ON THE SUBDIVISION OF THE FIBRES, AND THEIR SUBSEQUENT COHESION.

heretofore it was twelve steps above the surface of the ground.

PANTHER *(felis pardus)*, in zoology, a fierce, ferocious quadruped, of the size of a large dog, with short hair, of a yellowish colour, diversified with roundish black spots. It is a native of Africa, and has the general habits of the leopard.

PANTOGRAPH, a mathematical instrument so formed as to copy any sort of drawing or design.

PANTOMETER, an instrument used to take all sorts of angles, distances, and elevations.

PANTOMIME, in the modern drama, a mimic representation by gestures, actions, and various kinds of tricks performed by Harlequin and Columbine as the hero and heroine, assisted by Pantaloon and his clown.——*Pantomimes*, among the ancients, were persons who could imitate all kinds of actions and characters by signs and gestures. Scaliger supposes they were first introduced upon the stage to succeed the chorus and comedies, and divert the audience with apish postures and antic dances. In after times their interludes became distinct entertainments, and were separately exhibited.

PAPAW *(carica papaya)*, a tree growing in warm climates to the height of 18 or 20 feet, with a soft herbaceous stem, naked nearly to the top, where the leaves issue on every side on long foot-stalks. Between the leaves grow the flower and the fruit, which is of the size of a melon. The juice is acrid and milky, but the fruit when boiled is eaten with meat, like other vegetables; yet, when cultivated in our green-houses, the fruit is entirely worthless.

PAPER, a substance formed into thin sheets, on which letters and figures are written or printed. It received its name from the *papyrus*, the leaves of which plant originally served the Egyptians and certain other nations for writing on. Chinese paper is of various kinds, as of the rinds or barks of trees, especially of the mulberry, the elm, the bamboo, and the cotton-tree. Cotton is also used by us to an immense extent in the manufacture of paper; but that which is made from linen is by far the best and most durable. Paper is distinguished as to its use into writing paper, drawing paper, cartridge paper, copy, chancery, &c.; as to its size into foolscap, post, crown, demy, medium, royal, imperial, &c. Paper is made either by hand or by machinery; and perhaps none of the useful arts have received more attention in order to bring them to perfection than the paper manufacture. In respect to whiteness, fineness, and firmness, the paper made in England excels all other; though the French manufacture some of a very fine quality, while the Italians and Germans are noted more for the durability of their paper, than for its fineness.——*Improved method of making Paper by the aid of machinery:* "Nothing," says Dr. Ure, "places in a more striking light the vast improvement which has taken place in all the mechanical arts of England since the era of Arkwright, than the condition of our paper-machine factories now, compared with those on the continent. Almost every good automatic paper mechanism at present mounted in France, Germany, Belgium, Italy, Russia, Sweden, and the United States, has either been made in Great Britain, and exported to these countries, or has been constructed in them closely upon the English models." It is not a part of the plan of this work to enter into the minutiæ of detail in machinery or manufactures. Generally speaking, as in this case, they would occupy infinitely too great a portion of our space; but it would be remiss in us not to allude to some of the remarkable features which the inimitable paper-making machinery of this country presents, as well as to state its origin. In 1799, Louis Robert, then employed in the paper works of Essonne in France, contrived a machine to make paper of great size, by a continuous motion, and obtained for it a patent for 15 years, with a sum of 8000 francs from the French government, as a reward for his ingenuity. This invention was purchased by M. Didot, who came over with it to England, where he entered into several contracts for constructing and working it; and it eventually came into the possession of the Messrs. Fourdrinier, extensive paper makers and stationers, who, with the assistance of Mr. Donkin, a young and zealous mechanist, made wonderful improvements on the French invention, and in 1803 produced a self-acting cylindrical machine, with rotatory motion, for making an endless web of paper! Many and various have been the improvements introduced, since that period, by the aid of most ingenious and complicated machinery, resulting chiefly from the skill and enterprise of Mr. John Dickinson; till at length the art has so completely triumphed over every difficulty, that a continuous stream of fluid pulp is now passed round the cylinders with unerring precision, and not only made into paper, but actually dried, pressed smooth, and every separate sheet cut round the edges, in the brief space of five minutes.

PAPER-MONEY, or PAPER-CURRENCY, bank notes or bills issued by the credit of government, and circulated as the representative of coin. In a more extensive sense, these terms may denote all kinds of notes and bills of exchange.

PAPIER LINGE (*French*), a kind of paper made to resemble damask and other linen so cleverly, that it is impossible, without examination, to detect the difference; and even to the touch, the articles made from the *papier linge* are very much like linen, and can be used for every purpose to which linen is applicable, with the exception, of course, of those in which strength and durability are required.

PAPIER MACHÉ (*French*), the composition of which superior tea-trays, snuff boxes, and many other light and elegant articles, as well as a variety of toys, &c. are manufactured. They are made of cuttings of white or brown paper, boiled in water,

IN PAPER-MAKING, A QUANTITY OF CHLORIDE OF LIME IS MIXED WITH THE RAGS, THE EFFECT OF WHICH IS TO BLEACH AND PURIFY THEM.



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and beaten in a mortar till they are reduced to a kind of paste, and then boiled with a solution of gum arabic, or of size, to give consistency to the paste, which is afterwards formed into different shapes, by pressing it into oiled moulds. When dry, it is coated with a mixture of size and lamp-black, and afterwards varnished.

PAPIL'IO, in entomology, the name of a subdivision of the insect class, when in their *imago*, or third state; that is, when they have wings. Every fly is an *imago*; but a moth is called *phalæna*, and a butterfly *papilio*. The most natural and approved distinguishing names for the several species of insects (which are called the *trivial* names), are taken from the vegetables on which they feed: but in the multitude of *butterflies* the proportion that belong to extra-European parts of the world is so great, and their several foods so little known, that Linnæus was obliged to adopt a different scheme of nomenclature; and he accordingly divided them into sections by the names *equites*, *heliconii*, *danai*, *nymphales*, and *plebii*. The individuals of the section of *equites* have their names from the Trojan history; those of that of the *heliconii* from the Muses; the *danai* from the children of Danaus; the *nymphales* from the nymphs of antiquity; and the *plebii* from the celebrated ancients. In describing the *papilio* it will be necessary to confine ourselves to the first division of the Linnæan genus, viz. the *equites*. One of the most remarkable and interesting circumstances connected with this beautiful class is their series of transformations before reaching a perfect state. The female butterfly lays a great quantity of eggs, which produce caterpillars: these, after a short life, assume a new form, and become chrysalides—"the tomb of the caterpillar and the cradle of the butterfly." These chrysalides, or insect prisons, are attached in various ways, and are of different forms; but within the cell or covering, of whatever it may be composed, the disgusting caterpillar becomes the brilliant butterfly. A single female insect, in its perfect state, produces several hundred eggs, but their over increase is checked by a host of enemies. A single pair of sparrows, it is calculated, will destroy upwards of 3000 caterpillars in a week; and great numbers are also killed by a species of fly, which deposits its eggs in the caterpillar, where they hatch, and the larvæ feed on the body that protected them.

PAPIL'LÆ, the nipple of the breast, and terminations of the nerves in that form which constitutes the sense of feeling in the true skin, and of taste.

PAPILIONA'CEÆ, the 32d Linnæan natural order of plants, with flowers resembling the butterfly's wings, as the pea, &c.

PAPILIONA'CEOUS, in botany, an epithet for the corolla of plants which have the shape of a butterfly, such as that of the pea. The papilionaceous corolla is usually four-petaled, having an upper spreading petal, called the *banner*, two side petals called *wings*, and a lower petal called the *keel*.

PAPILLA'RUM PROCES'SUS, in anatomy, the extremities of the olfactory nerves, which convey the slimy humours by the fibres that pass through the *os cribriforme*.

PAPILLARY, or PAPILLOUS, pertaining to or resembling a nipple.——*Papillose*, in botany, covered with fleshy dots or points, or with soft tubercles, as the ice-plant.

PA'PIST, one that adheres to the doctrines and ceremonies of the church of Rome; a Roman catholic. Hence *papistry*, *papistical*, &c.

PAPPOOS', the name given to a young child by the natives of New England.

PAR VA'GUM, in anatomy, the eighth pair of nerves.

PAP'PUS, in botany, *thistle-down*, a sort of feathery or hairy crown with which many seeds are furnished for the purpose of dissemination. A seed surmounted by a pappus resembles a shuttle-cock, so that it is naturally formed for flying, and for being transported by the wind to a very considerable distance from its parent plant. By this contrivance of nature the dandelion, groundsel, &c. are disseminated and self-sown in places where they would otherwise have never existed.

PAP'ULÆ, in medicine, little blisters, pimples, or eruptions on the skin.

PAP'ULOSE, in botany, an epithet for a leaf, &c. covered with vesicular points or with little blisters.

PAPYROG'RAPHY, a lately-invented art, which consists of taking impressions from a kind of pasteboard covered with a calcareous substance (called lithographic paper), in the same manner as stones are used in the process of lithography.

PAPY'RUS (*cyperus papyrus* of Linnæus), an Egyptian sedge-like plant, or reed grass, which has acquired an immortal fame in consequence of its leaves having furnished the ancients with paper. It grows in the marshes of Egypt or in the stagnant places of the Nile. Its roots are tortuous, and in thickness about four or five inches; its stem, which is triangular and tapering, rises to the height of ten feet, and is terminated by a compound, wide spreading, and beautiful umbel, which is surrounded with an involucre composed of eight large sword-shaped leaves. The uses of the papyrus were, however, by no means confined to the making of paper. The inhabitants of the countries where it grows, even to this day, manufacture it into sail-cloth, cordage, and sometimes wearing apparel. Boats are made by weaving the stems compactly together, and covering them externally with a resinous substance to prevent the admission of water.

PAR (Latin, *equal*), in commerce, is said of any two things equal in value; and in money-affairs, the equality of one kind of money or property with another: thus, when 100*l.* stock is worth exactly 100*l.* specie, the stock is said to be *at par*; that is, the purchaser is required to give neither more nor less of the commodity with which he parts, than he receives of that which he acquires: thus, too, the *par* of exchange is the equal value of money in one country and another.



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In the exchange of money with foreign countries, the person to whom a bill is payable is supposed to receive the same value as was paid to the drawer by the remitter; but this is not always the case with respect to the intrinsic value of the coins of different countries, which is owing to the fluctuation in the prices of exchange among the several countries and great trading cities. In fine, bills of exchange, stocks, &c. are *at par* when they sell for their nominal value; *above par* when they sell for more; and *be low par* when they sell for less.

PA'RA, a Turkish coin, very small and thin, of copper and silver, the fortieth part of a Turkish piaster.

PARA'BLE, a fable or allegorical representation of something real or apparent in life or nature, from which a moral is drawn for instruction. Parables are certainly a most delicate way of impressing disagreeable truths on the mind, and in many cases have the advantage of a more open reproof, and even of formal lessons of morality: thus Nathan made David sensible of his guilt by a parable; and thus our Saviour, in compliance with the customs of the Jews, who had a kind of natural genius for this sort of instruction, spoke frequently in parables, most beautifully constructed, and calculated to convince them of their errors and prejudices.

PARAB'OLA, in conic sections, a curve produced by cutting a cone parallel to one of its sides, and having at such section certain fixed proportions; when the same proportions govern bodies in motion, they are said to describe a parabola, and this is theoretically the case with projectiles from the earth.——*Parabolic Asymptote*, a parabolic line approaching to a curve, so that they never meet; yet, by producing both indefinitely, their distance from each other becomes less than any given line.——*Paraboliform*, having the form of a parabola.

PARAB'OLE, in oratory, similitude; comparison. Hence, *parabolical* instruction or description.

PARAB'OLISM, in algebra, the division of the terms of an equation by a known quantity that is involved or multiplied in the first term.

PARAB'OLOID, in geometry, a paraboliform curve whose ordinates are supposed to be in the subtriplicate, subquadruplicate, &c. ratio of their respective abscissæ. Another species is when the parameter, multiplied into the square of the abscissæ, is equal to the cube of the ordinate: the curve is then called a semi-cubical paraboloid.

PARACEL'SIAN, a name given to a physician who follows the practice of Paracelsus, a celebrated Swiss physician and alchymist who lived at the close of the 15th century, and who performed many extraordinary cures by means totally unknown to the generality of medical practitioners of his time.

PARACEN'TRIC MOTION, in astronomy, denotes so much as a revolving planet approaches nearer to, or recedes from, the sun or centre of attraction.

PARACH'RONISM, an error in chronology, by which an event is related as having happened later than its true date.

PAR'ACHUTE, in aerostation, a machine or instrument in the form of a large umbrella, calculated to break the fall of a person in descending from an air-balloon.

PAR'ACLETE, the *Comforter*, a term applied in the sacred volume to the Holy Spirit.

PAR'ADIGM, in grammar, an example of a verb conjugated in the several moods, tenses, and persons.

PAR'ADISE, a region of supreme felicity; generally meaning the garden of Eden, in which Adam and Eve were placed immediately after their creation. The locality of this happy spot has been assigned, by different writers, to places the most opposite. In truth, there is scarcely any part of the world where Paradise has not been sought for. The most probable opinion is, that it was situated between the confluence of Euphrates and Tigris, and their separation; Pison being a branch arising from one of them after their separation,—and Gihon, another branch arising from the other on the western side. Arabia Deserta was the Ethiopia mentioned by Moses as washed by these rivers; and Chusistan, in Persia, answers to the land of Havilah, where there was gold, bdellium, the onyx-stone, &c.—— When Christians use the word, they mean that celestial paradise, or place of pure and refined delight in which the souls of the blessed enjoy everlasting happiness. In this sense it is frequently used in the New Testament: our Saviour tells the penitent thief on the cross, "This day shalt thou be with me in paradise;" and St. Paul, speaking of himself in the third person, says, "I knew a man who was caught up into paradise, and heard unspeakable words, which it is not lawful for a man to utter."

PARADISE'A, or BIRDS OF PARADISE, in ornithology, a genus of birds belonging to the order *Pica*. The beak is covered with a belt or collar of downy feathers at the base, and the feathers on the sides are very long; their whole plumage being singular and splendid. They occur in China, Japan, Persia, and various parts of India, but are supposed to be originally natives of New Guinea. The tail consists of ten feathers; the two middle ones, and sometimes more in several of the species, are very long, and webbed only at the base and tips. The legs and feet are very large and strong; they have three toes forward, one backward, and the middle connected to the outer one as far as the first joint. The whole of this genus have, till lately, been very imperfectly known; few cabinets possessing more than one species, viz. the greater or common bird of Paradise; nor has any set of birds given rise to more fables, the various tales concerning which are to be found in every author; such as, their never touching the ground from their birth to death; living wholly on the dew; being produced without legs; and a number of other stories too ridiculous to mention.



THE PARABOLA ENABLES US TO CALCULATE MATHEMATICALLY THE PATH OF A PROJECTILE, FROM THE PROPORTIONATE MAGNITUDE OF THE TWO FORCES.

"THE SAINTS SHALL ALL BE PARADISE, FAR HAPPIER PLACE THAN THIS OF EDEN, AND FAR HAPPIER DAYS."—MILTON'S PARADISE LOST.

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THE MORE ELEVATED AN OBJECT IS ABOVE THE HORIZON, THE LESS IS THE PARALLAX, OR DISTANCE FROM THE EARTH'S CENTRE CONTAINING THE SAME.

THE APPARENT LONGITUDE IS GREATER THAN THE TRUE LONGITUDE, WHEN THE OBJECT IS EAST OF THE MERIDIAN, OTHERWISE LESS.

There are several species; one of which, viz. the *great bird of Paradise*, is thus described:—It is of a cinnamon hue; crown luteous; throat golden green or yellow; side feathers very long and floating; length, from the end of the bill to the end of the real tail, about twelve inches; but to the end of the long hypochondroid feathers, nearly two feet. This species is found in the Molucca islands, and those round New Guinea. They move in flights of thirty or forty, with a leader above the rest, and preserve their light and voluminous plumage in order, by always flying against the wind. The peculiar length and structure of their feathers hinders them from settling in high winds on trees; and when they are thrown on the ground by these winds they cannot rise again.

PAR'ADOX, in philosophy, a tenet or proposition seemingly absurd, or contrary to received opinion, yet true in fact.

PAR'AGOGE (pron. *paragojy*), a figure in grammar by which the addition of a letter or syllable is made to the end of a word.——*Paragoge*, in anatomy, a term signifying that fitness of the bones to one another which is discernible in their articulation.

PAR'AGON, a model by way of distinction implying superior excellence or perfection; as, a *paragon* of beauty or eloquence.

PAR'AGRAM, a play upon words. Hence *paragrammatist*, an appellation for a punster.

PAR'AGRAPH, any section or portion of a writing which relates to a particular point, whether consisting of one sentence or many sentences. Paragraphs are generally distinguished by a break in the lines; or, when a great quantity of print is intended to be compressed in a small space, they may be separated by a dash, thus ——. A paragraph is also sometimes marked thus ¶.

PARALEPSIS, or PARALEPSY, a figure in rhetoric by which the speaker pretends to pass by what at the same time he really mentions.

PARALIPOM'ENA, in matters of literature, denotes a supplement of things omitted in a preceding work.

PAR'ALLAX, in astronomy, the difference between the places of any celestial objects as seen from the surface, and from the centre of the earth at the same instant——*Annual Parallax*, a change in the apparent place of a heavenly body, caused by its being viewed from the earth in different parts of its orbit round the sun. The annual parallax of the planets is considerable, but that of the fixed stars has till very recently been considered as altogether imperceptible. The following information is gathered from the Philosophical Magazine: "*Parallax of the Fixed Stars*—A magnificent conquest has been achieved by Professor Bessel, of Konigsburg, in a series of observations of the double star, No. 61, in the constellation Cygnus, whose distance he has ascertained to be 660,000 times (in round numbers) the radius of the earth's orbit, or (also in round numbers) 62,700,000,000,000 miles. The details of this important discovery have been communicated by him to Sir John Herschel, bart., in a letter dated Oct. 23, 1838, which was read to the Astronomical Society on Nov. 9."——*Parallax*, in levelling, denotes the angle contained between the line of the true level and that of the apparent level.

PAR'ALLEL, in geometry, an appellation given to lines, surfaces, and bodies everywhere equidistant from each other.——*Parallel planes*, are such planes as have all the perpendiculars drawn betwixt them equal to each other.——*Parallel rays*, in optics, are those which keep at an equal distance from the visible object to the eye, which is supposed to be infinitely remote from the object.——*Parallel Circles*, or *circles of latitude*, are lesser circles of the sphere conceived to be drawn from west to east, through all the points of the meridian, commencing from the equator to which they are *parallel*, and terminating with the poles. They are called parallels of latitude, because all places lying under the same parallel have the same latitude.——*Parallel sphere*, in astronomy, the situation of the sphere when the equator coincides with the horizon, and the poles with the zenith and nadir.——*Parallel sailing*, in navigation, the sailing on or under a parallel of latitude, or parallel to the equator.——*Parallel ruler*, a mathematical instrument consisting of two equal rulers, so connected together with cross bars, that with movable joints parallel lines may thereby be drawn to any extent when they are opened.——*Parallel lines*, in sieges, are those trenches which generally run parallel with the outlines of the fortress. They serve as places for concentrating the forces to be directed against the fortress, and are usually three feet deep, from nine to twelve feet wide, and of a length adapted to the circumstances of the case.——The word *parallel* is also often used metaphorically, to denote the continued comparison of two objects, particularly in history. Thus we speak of drawing an historical *parallel* between ages, countries, or men.——*Parallel passages*, are such passages in a book as agree in import; as, for instance, the parallel passages in the bible.

PAR'ALLELISM *of the Earth's axis*, in astronomy, that situation of the earth's axis, in its progress through its orbit, whereby it is still directed towards the pole-star; so that if a line be drawn parallel to its axis, while in any one position, the axis, in all other positions, will be always parallel to the same line. This parallelism is the result of the earth's double motion, viz. round the sun and round its own axis; or its annual and diurnal motion; and to it we owe the vicissitudes of seasons, and the inequality of day and night.

PARALLEL'OGRAM, in geometry, a plane figure bounded by four right lines, of which the opposite are parallel and equal to one another.——In common use, this word is applied to quadrilateral figures of more length than breadth.

PARALLELOPI'PED, in geometry, a



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CREEPING ROOTS ARE EXTREMELY TENACIOUS OF LIFE, FOR CUT THEM IN WHATEVER WAY YOU MAY, ANY PORTION WILL GROW.

regular solid comprehended under six parallelograms, the opposite ones of which are similar, parallel, and equal to each other; or it is a prism whose base is a parallelogram.

PARALLELOPIPE'DIA, in mineralogy, a genus of spars, externally of a determinate and regular figure, always found loose and separate from other bodies, and in the form of an oblique parallelopiped, with six parallelogramic sides and eight solid angles.

PARAL'OGISM, in logic, a false reasoning, or a fault committed in demonstration, when a consequence is drawn from principles which are false, or though true, are not proved; or when a proposition is passed over that should have been proved by the way.

PARAL'YSIS, in medicine, Palsy, or the loss of the power of muscular motion.

PARAM'ETER, in conic sections, a constant line, otherwise called the *latus rectum* of a parabola. A third proportional to any diameter and its conjugate.

PAR'AMOUNT, in law, the supreme lord of the fee. The lords of those manors that have other manors under them are styled lords-paramount; and the king, who, in law, is chief lord of all the lands in England, is thus the lord-paramount.——In common parlance, it means superior to everything else; as, a man's private interest is usually *paramount* to all other considerations.

PAR'ANYMPH, among the ancients, the person who waited on the bridegroom and directed the nuptial solemnities. As the *paranymph* officiated only on the part of the bridegroom, a woman called *pronuba* officiated on the part of the bride.——In poetry, the term paranymph is still occasionally used for the *brideman*.

PAR'APEGM, in ancient customs, signified a brazen table fixed to a pillar, on which laws and proclamations were engraved. Also, a table set in a public place, containing an account of the rising and setting of the stars, eclipses, seasons, &c.

PAR'APET, in fortification, a wall, rampart, or elevation of earth for screening soldiers from an enemy's shot. It means literally, a wall breast high.

PARAPHERNA'LIA, or PARAPHER'NA, in law, the goods which a wife brings with her at her marriage, or which she possesses beyond her dower or jointure, and which remain at her disposal after her husband's death. They consist principally of the woman's apparel, jewels, &c., which, in the lifetime of her husband, she wore as the ornaments of her person; nor can the husband devise such ornaments and jewels of his wife, though, during his life, he has power to dispose of them.

PAR'APHRASE, an explanation of some text or passage in an author, in terms more clear and ample than in the original.—He who performs this is termed a *paraphrast*.

PARAPHRENI'TIS, in medicine, an inflammation of the diaphragm.

PARAPHROSY'NE, a term used by medical writers to express a delirium, or an alienation of mind in fevers, or from whatever cause.

PARAPLE'GIA, or PAR'APLEGY, in medicine, a species of paralysis usually succeeding an apoplexy: that kind of palsy which affects the lower part of the body.

PARARYTH'MOS, in medicine, a pulse not suitable to the age of the person.

PAR'ASANG, a Persian measure of length, varying in different ages, and in different places, from thirty to fifty stadia or furlongs.

PARASCE'NIUM, in the Grecian and Roman theatres, was a place behind the scenes whither the actors withdrew to dress and undress themselves. The Romans more frequently called it *postscenium*.

PARASCE'VE, a word signifying *preparation*, given by the Jews to the sixth day of the week, or Friday; because, not being allowed to prepare their food on the sabbath day, they provided and prepared it on the day previous.

PARASELE'NE, a mock moon, or phenomenon encompassing or adjacent to the moon, in form of a luminous ring; which are sometimes one, two, or more bright spots bearing considerable resemblance to the moon. The paraselenes are formed after the same manner as the *parhelia*, or mock suns.

PARASI'TI, among the Greeks, were an order of priests, or at least ministers of the gods, resembling the *Epulones* at Rome. Their business was to collect and take care of the sacred corn destined for the service of the temples and the gods; to see that sacrifices were duly performed, and that no one withheld the first fruits, &c. from the deities. In every village of the Athenians, certain *Parasiti*, in honour of Hercules, were maintained at the public charge; but, to ease the commonwealth of this burthen, the magistrates at last obliged some of the richer sort to take them to their own tables, and entertain them at their individual expense: hence the word *parasite*, by which we denote a hanger-on, a fawning flatterer, one who, for the sake of a good dinner at the expense of another person, would be ready to surfeit him with adulation.

PARASI'TICAL PLANTS, in botany, such plants as are produced out of the trunk or branches of other plants, and receive their nourishment from it. Of this class is the mistletoe, which shoots out its radicle in whatever position chance places it. The seed, which finds the materials of its growth in the glue that envelopes it, germinates and grows not only on living and dead wood, but also on stones, glass, and even iron. In all these cases the radicle is constantly directed towards the centre of these bodies, which proves that it is not towards a medium suited to afford it nourishment that the embryo of the mistletoe directs its radicle, but that this radicle obeys the attraction of the bodies on which the seed is fixed, of whatever nature they may be.

PARASI'TIUM, among the Greeks, the

THE FIBRES OF PARASITICAL PLANTS ARE THICK AND FLESHY, IN ORDER TO ATTACH THEM FIRMLY TO THE BRANCHES ON WHICH THEY GROW.



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granary where the sacred corn was preserved, by the *Parasiti*, for sacred purposes.

PARASTREM'MA, in medicine, a convulsive distortion of the mouth, or any part of the face.

PARATH'ESIS, a term used by some grammarians for apposition, or the placing of two or more nouns in the same case.

PARAVA'IL, in feudal law, the lowest tenant holding under a mediate lord, as distinguished from a tenant in *capite*, who holds immediately of the king.

PAR'CÆ, or the FATES, in the heathen mythology, were three goddesses who were supposed to preside over the accidents and events, and to determine the date or period of human life. They were called Atropos, Clotho, and Lachesis, and are represented as spinning the thread of human life; in which employment Clotho held the distaff, Lachesis turned the wheel, and Atropos cut the thread. Their persons are variously described; sometimes they are represented as old women, one holding a distaff, another a wheel, and a third a pair of scissars. Others paint Clotho in a robe of various colours, with a crown of stars upon her head, and holding a distaff in her hand; Lachesis in a garment covered with stars, and holding several spindles; and Atropos they clad in black, cutting the thread with a large pair of scissars.

PAR'CENER, or CO-PAR'CENER, in law, a coheir, or one who holds lands by descent from an ancestor in common with others. The holding or occupation of lands of inheritance by two or more persons, differs from *joint tenancy*, which is created by deed or devise, whereas *parcenary* is created by the descent of lands from a common ancestor.

PAR'CH'MENT, in commerce, the skins of sheep or goats prepared in such a manner as to render them proper for writing upon. This is done by separating all the flesh and hair, rubbing the skin with pumice-stone and pulverised chalk, and reducing its thickness with a sharp instrument. *Vellum* is made of the skins of abortive or very young calves. The Hebrews had books written on the skins of animals in David's time; and Herodotus relates, that the Ionians from the earliest period wrote upon goat and sheepskin, from which the hair had been merely scraped off.

PAREL'CON, in grammar, the addition of a word or syllable at the end of another.

PAREM'BOLE, a figure in rhetoric, often confounded with the *parenthesis*. The parembole is, in reality, a species of parenthesis; but its specific character is this, that *it relates to the subject*; while the parenthesis is foreign from it.

PAREN'CHYMA, in anatomy, the solid and interior part of the viscera, or the substance contained in the interstices between the blood-vessels of the viscera.——In botany, the pith or pulp of plants.

PA'RENT (*parens*), a term of relationship applicable to those from whom we immediately receive our being. Parents, by the law of the land as well as by the law of nature, are bound to educate, maintain, and defend their children, over whom they have a legal as well as a natural power: they likewise have interest in the profits of their childrens' labour, during their nonage, in case the children live with and are provided for by them; yet the parent has no interest in the real or personal estate of a child, any otherwise than as his guardian. The laws relating to the mutual rights and duties of parents and children are a very important part of every code, and have a very intimate connexion with the state of society and with civil institutions. In ancient times, when paternity was a great foundation of civil authority, the parental rights were much more absolute than in the modern, extending, in some countries, to the right of life and death, and continuing during the life of the two parties.

PARENTA'LIA, in antiquity, funeral obsequies, or the last duties paid by children to their deceased parents. The term is also used for a sacrifice, or solemn service, offered annually to the manes of the dead.

PAR'GASITE, in mineralogy, a variety of *actinolite*; a mineral of a grayish or bluish green, in rounded grains, with a dull, duncoloured surface; or in crystals of carbonate of lime, in little plates mixed with lamellar mica.

PARHE'LION, in astronomy, a mock sun or meteor, having the appearance of the sun itself and seen by the side of that luminary. Parhelia are sometimes double, sometimes triple, and sometimes even more numerous. They are formed by the reflection of the sun's beams on a cloud properly situated; and are accounted for by supposing an infinity of little particles of ice floating in the air, which multiply the image of the sun by refraction or reflection. Sometimes a *parhelion* is tinged with colours like the rainbow, with a luminous train.

PA'RIAN MAR'BLE, a sort of white marble, so called from the island of Paros, where it was first found.——*Parian Chronicle*. [See ARUNDELIAN MARBLES.]

PA'RIAS, a degraded tribe of Hindoos, who live by themselves in the outskirts of towns; and, in the country, build their houses apart from the villages, or rather have villages of their own. They dare not in cities pass through the streets where the Brahmins live; nor enter a temple of the superior castes. They are prohibited from all approach to any thing pure, and are doomed to perform all kinds of menial work.

PAR'IETAL BONES, in anatomy, two arched bones situated one on each side of the superior part of the cranium. They are thicker above than below; but are somewhat thinner, and at the same time more equal and smooth than the other bones of the cranium. In new-born infants the *ossa parietalia* are separated from the middle of the divided *os frontis* by a portion of the cranium then unossified.

PAR IMPAR, in antiquity, a game of chance practised among the Greeks and Romans. It was identical with the game



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of "even or odd" practised by the boys of modern times.

PA'RIS, PLASTER OF, a composition of lime and sulphuric acid, used in making casts and moulds.

PAR'ISH, the precinct or territorial jurisdiction of a secular priest, the inhabitants of which belong to the same church. Some parishes are, however, so large and populous, that they contain one or more chapels of ease. In 1835, England and Wales contained 11,077, and Ireland 2450 parishes.

PARK, a large piece of ground enclosed and privileged for beasts of the chase. To render an enclosure a park, a licence must be obtained under the broad seal; but there are parks in *reputation*, though not erected with lawful warrant; and the owner of such may bring his action against any one stealing deer therein. To constitute a park, three things are required; a royal grant or license; inclosure by pales, a wall, or hedge; and beasts of chase, as deer, &c.——*Park* also signifies a large net placed on the brink of the sea, with only one entrance, which is next the shore, and which is left dry by the ebb of the tide.——*Park of artillery*, a place in the rear of both lines of an army for encamping the artillery, which is formed in lines, the guns in front, the ammunition-wagons behind the guns, and the pontoons and tumbrils forming the third line. The whole is surrounded with a rope. The gunners and matrosses encamp on the flanks; the bombardiers, pontoon-men and artificers in the rear.—The phrase is also applied to denote the whole train of artillery belonging to an army or division of troops.——*Park of provisions*, the place where the sutlers pitch their tents and sell provisions, and that where the bread-wagons are stationed.

PAR'LIAMENT, the grand assembly of the three estates in Great Britain, or the great council of the nation, consisting of the King, Lords, and Commons, which forms the legislative branch of the government. The word *parliament* was introduced into England under the Norman kings. The supreme council of the nation was called by our Saxon ancestors, the *wittenagemote*, the meeting of wise men or sages. A parliament is called by the king's [queen's] writ, or letter, directed to each lord, summoning him to appear; and by writs sent by the lord chancellor under the great seal, commanding the sheriffs of each county to take the necessary steps for the election of members for the county, and the boroughs contained in it. On the day appointed for the meeting of parliament, the king [queen] sits in the house of lords under a canopy, dressed in his [her] robes, as are all the lords in theirs; and, the commons being summoned to the bar of that house, the sovereign addresses both houses on the state of public affairs. The commons are then required to choose a speaker, which officer being presented to and approved by the sovereign, the latter withdraws, the commons retire to their own house, and the business of parliament begins. In the house of lords, the seat of each member is prescribed according to rank; though, except in the presence of the king [queen] this formality is almost wholly dispensed with. The princes of the blood sit on each side the throne; the two archbishops against the wall on the king's right hand; the bishops of London, Durham, and Winchester below the former, and the other bishops according to priority of consecration. On the king's [queen's] left hand, above all the dukes except those of the blood royal, sit the lord treasurer, lord president, and lord privy-seal; then the dukes, marquises, and earls, the individuals of each class taking precedence according to the date of their creation. Across the room are woolsacks, continued from ancient custom; and on the first of these, immediately before the throne, sits the lord chancellor, as speaker of the house. On the other woolsacks are seated the judges, masters in chancery, and king's counsel, who only give their advice on points of law.—In the house of commons there are no peculiar seats for any members. The speaker only has a chair appropriated to him at the upper end of the house, and at a table before him sit the clerk and his assistant. When the parliament is thus assembled, no member is to depart without leave. Upon extraordinary occasions, all the members are summoned; otherwise, three hundred of the commons is reckoned a full house, and forty may compose a house for the dispatch of business. The method of making laws is much the same in both houses. In each house the act of the majority binds the whole; and this majority is declared by votes openly given; not privately, or by ballot.—To bring a *bill* into the house of commons, if the relief sought by it is of a private nature, it is first necessary to prefer a petition, which must be presented by a member, and usually sets forth the grievance desired to be remedied. In public matters, the bill is brought in upon motion made to the house, without any petition.— A *committee of the whole house* is composed of every member; and, to form it, the speaker quits the chair (another member being appointed chairman), and may sit and debate as a private member. In these committees the bill is debated clause by clause, amendments made, the blanks filled up, and sometimes the bill entirely new-modelled. After it has gone through the committee, the chairman reports it to the house with such amendments as the committee have made; and then the house reconsider the whole bill again, and the question is repeatedly put upon every clause and amendment. When the house have agreed or disagreed to the amendments of the committee, and sometimes added new amendments of their own, the bill is then ordered to be engrossed. When this is finished, it is read a third time, and amendments are sometimes then made to it; and if a new clause be added, it is done by tacking a separate piece of parchment on the bill, which is called a *rider*. The speaker then again opens the contents, and, holding it up in his hands, puts the



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"A PARODY NEVER FAILS TO PRODUCE ADMIRATION AND DELIGHT, WHEN IT UNITES TASTE IN SELECTION WITH FELICITY OF APPLICATION."—PERCIVAL.

question whether the bill shall pass. If this be agreed to, the title is then settled; and one of the members is directed to carry it to the lords for their concurrence. When both houses have done with any bill, it always is deposited in the house of peers, to wait the royal assent, except in the case of a money bill, which, after receiving the concurrence of the lords, is sent back to the house of commons. The answer to the question put by the speaker, or the chairman, in the house of commons, is *Ay* or *No;* and in the house of peers, *Content* or *Not Content*. The royal assent to bills may be given, either in person (when the sovereign appears on the throne in the house of peers, regally attired), or by letters patent under the great seal, and duly signed. And when the bill has received the royal assent in either of these ways, it is then, and not before, a statute or act of parliament.

PARLIAMENTA'RIAN, an epithet for those who aided with the English republican parliament in opposition to king Charles I.

PAR'ODY, a kind of writing in which the words of an author or his thoughts are, by some slight alterations, adapted to a different purpose; or it may be defined, a poetical pleasantry in which the verses of some author are, by way of ridicule, applied to another object; or in turning a serious work into burlesque by affecting to observe the same rhymes, words, and cadences.

PARO'L, in law, anything done verbally, or by oral declaration; as *parol evidence*. ——*Parole*, in military affairs, a promise given by a prisoner of war when suffered to be at large, that he will return at the time appointed, unless he shall have previously been discharged or exchanged.——*Parole* also means the watch-word given out every day in orders by a commanding officer, in camp or garrison, by which friends may be distinguished from enemies.

PAROMOL'OGY, in rhetoric, a figure of speech by which the orator concedes something to his adversary, in order to strengthen his own argument.

PARONOMA'SIA, a rhetorical figure, by which words nearly alike in sound, but of very different or opposite meanings, are affectedly or designedly used; a play upon words.

PARONYC'HIA, in medicine, a whitlow, or abscess formed near the nails or tips of the fingers. Any collection of pus formed in the fingers is termed by medical writers *panaris*, or whitlow, and is an abscess of the same nature with those arising in any other parts of the body.

PAR'RICIDE, strictly signifies the murder or murderer of a father, as *matricide* does of a mother; yet this word is ordinarily taken in both senses, and is also extended to the murder of any near relation. The word *parricide* is also applied to one who invades or destroys any to whom he owes particular reverence, as his country or patron. By the Roman law it was punished in a severer manner than any other kind of homicide. After being scourged, the delinquents were sewn up in a leathern sack, with a live dog, a cock, a viper, and an ape, and thus cast into the sea. Solon, it is true, made no law against parricide, apprehending it impossible that any one should be guilty of so unnatural a barbarity.

PARRICIDIUM, a name given by a decree of the Roman senate to the ides of March, which was the anniversary of Cæsar's assassination. Dolabella the consul proposed a law to change its name to *Natalis Urbis*, as he looked on that day as the birthday of Roman liberty.

PARO'TIS, or PARO'TID GLAND, in anatomy, a large conglomerate and salival gland, situated under the ear, between the mammillary process of the temple bone and the angle of the lower jaw. The excretory duct of this gland opens in the mouth, and is called, from its discoverer, the *Stenonian* duct. The word *parotis* is also used to denote an inflammation or abscess of the parotid gland.

PAR'OXYSM, in medicine, a fit of higher excitement or violence in a disease that has remissions or intermissions; as the *paroxysm* of a fever or the gout.

PAR'REL, among seamen, an apparatus or frame made of ropes, trucks, and ribs, so contrived as to go round the mast, and being fastened at both ends to a yard, serves to hoist it.

PAR'ROT, in ornithology, the name given to birds of the genus *Psittacus*, the species of which are very numerous. Parrots are found almost everywhere in tropical climates. They are distinguished by a hooked bill, a movable upper mandible, rich plumage, and by the faculty they possess of making indistinct articulations of words in imitation of the human voice. Their hooked bill is very serviceable to them in climbing. They breed in hollow trees, subsist on fruits and seeds, and often attain a great age. The common gray parrot is the most remarkable for its loquacity, docility, and distinctness of articulation; but many of the varieties are far more beautiful.

PARS'ING, in grammar, the resolving a sentence into its elements, by showing the several parts of speech of which it is composed, and their relation to each other according to grammatical rules.

PARS'LEY, in botany, a well known garden vegetable, of the genus *Apium*. The leaves are much used in cookery, communicating an aromatic and agreeable flavour to soups and other dishes; and the root is an aperient medicine. Among the Greeks, parsley was made use of for decorating the tombs of the deceased, and consequently was regarded as a vegetable not much calculated to contribute to agreeable sensations. It was, however, the herb of which, in the Isthmian and Nemean games, the crowns of the victors were composed. Among the Romans, parsley was considered a necessary ingredient in their festive garlands, because it retains its verdure a long time, affords a grateful smell, and was supposed to absorb the inebriating fumes of wine, and by that means prevent intoxication.

AN ACT OF PARLIAMENT CANNOT BE ALTERED, SUSPENDED, OR REPEALED, BUT BY THE SAME FORMS, AND BY THE SAME AUTHORITY OF PARLIAMENT.

PARS'NEP, in botany, a well known culinary vegetable, of the genus *Pastinaca*; the root of which is deemed a valuable esculent. Besides their use for the table, parsneps are often cultivated on an extensive scale as fodder for cattle. The milk of cows is improved in quality, and the quantity is increased by them, while butter of a fine saffron yellow colour, and excellent flavour, is produced by this food. As the roots are not liable to injury from frosts, they may remain in the ground all the winter, and be taken up as required.

PAR'SON, the rector or incumbent of a parish, who has the parochial charge or cure of souls.——*Parsonage*, a rectory endowed with a house, glebe, lands, tithes, &c., for the maintenance of the incumbent. There may, notwithstanding, be a parsonage without either glebe or tithes, but only annual payments.—— *Parson Imparsonee*, signifies one that is in possession of a church, whether it be presentative or impropriate, and with whom the church is then full.

PARTER'RE, in gardening, a level division of ground furnished with evergreens and flowers; sometimes cut into shell and scroll work with alleys between them.

PARTHENON, in ancient architecture, the name given to the celebrated Grecian temple of Minerva, erected during the splendid era of Pericles. It was built of marble upon a spot elevated on all sides above the town and citadel; of the Doric order; 222 Greek feet in length, and 69 in height. This magnificent temple had resisted all the ravages of time; had been in turn converted into a Christian church and a Turkish mosque; but in the year 1687, when the Venetians besieged the citadel of Athens, under the command of general Koenigsmarck, a bomb fell most unluckily on the devoted Parthenon, set fire to the powder which the Turks had shut up therein, and thus the roof was entirely destroyed, and the whole building almost reduced to ruins.

PARTIAL, in botany, an epithet for *subordinate*; as, a *partial* umbel; a *partial* peduncle. A partial involucre is placed at the foot of a partial umbel.

PARTICEPS CRIMINIS, in law, an accomplice, or one who has a share in the guilt.

PAR'TICIPLE, in grammar, a word so called because it participates of both a noun and a verb; being variable through the genders and cases like the former, and regarding time, action, passion, &c. like the latter. ——Participles sometimes lose the properties of a verb, and become adjectives; as, she is a girl of *engaging* manners; that man is an *accomplished* orator.

PARTICLE, in physics, a minute part of a body, an aggregation or collection of which constitutes the whole body or mass. Sometimes it is used in the same sense as *atom*; as, *particles* are the elements or constituent parts of bodies. It also signifies a very small portion or part; he has not a *particle* of virtue; he would not resign a *particle* of his property.——In grammar, *particles* are such parts of speech as are incapable of any inflection, as the preposition, conjunction, &c. Many grammarians have, however, dropped this name, and divided all parts of speech into declinable and indeclinable.

PARTITE, in botany, an epithet for divided: thus, a *partite* leaf is a simple leaf separated down to the base.

PART'NERS, in a ship, strong pieces of timber bolted to the beams encircling the masts, to keep them from *rolling*, that is, falling over the ship's sides.

PART'NERSHIP, the association of two or more persons for the prosecution of any trade, manufacture, or commercial enterprise, at their joint expense. In this case the connection is formed by contract; each partner furnishing a part of the capital stock, and being entitled to a proportional share of profit, or subject to a proportional share of loss; or one or more of the partners may furnish money or stock, and the others may contribute their services. A partnership or association of this kind is a standing or permanent company, and is denominated a *firm* or *house*. Though partnerships ought not to be entered into without great circumspection, the benefits of a union of the means and advantages of different persons for the conduct of a business, in many instances, are too obvious to need illustration.

PARTRIDGE, in ornithology, a well-known bird of the genus *Tetrao*, comprehending grouse, partridges, and quails, in all 75 species. The common partridge (*perdix*) is found all over Europe. The places partridges delight in most are corn fields, especially whilst the corn grows; for under that cover they shelter and breed; and they are frequented by them when the corn is cut down for the grain. They contribute so much to the gourmand's pleasure that many experiments were formerly in use to take them alive; but their destruction is now almost entirely reserved for the shot of the sportsman, or the net of the poacher.

PAR'TY, in a political sense, has been well defined, "the madness of the many for the gain of the few." Yet it differs from *faction*, in implying a less dishonourable association of persons, or more justifiable designs. Free governments are the hotbeds of party; yet, probably, without the existence of opposing parties in a state, civil freedom would no longer exist.—— *Party*, in military affairs, a small detachment or number of men sent upon any particular duty, as a recruiting party, &c.—— The word *party* is likewise used to qualify other words, and may be considered either as part of a compound word, or as an adjective; as *party* rage, *party* disputes, &c.—— *Party-coloured*, having divers colours: as, a party-coloured plume, &c.——*Party-walls*, partitions of brick made between buildings separately occupied, to prevent the spreading of fire.——*Party-jury*, in law, a jury consisting of half foreigners and half Englishmen.

PARU'LIS, in medicine, an inflammation, boil, or abscess in the gums.



SIR R. COER OBSERVES, THAT THE APPELLATION OF PARSON IS THE MOST LEGAL AND MOST HONOURABLE TITLE A PARISH PRIEST CAN ENJOY.

IN 1800, LORD ELGIN REMOVED A VARIETY OF THE STATUES, FRIEZES, &C. FROM THE PARTHENON, WHICH ARE NOW TO BE SEEN IN THE BRITISH MUSEUM.

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LE BRUN HAS ENUMERATED NO FEWER THAN TWENTY "PASSIONS," OF WHICH, HE SAYS, THE SIGNS MAY BE WELL EXPRESSED BY THE PENCIL.

**PASIG'RAPHY**, a system of universal writing, or a manner of writing that may be understood and used by all nations. Numerous have been the attempts to establish a universal language, particularly by the philosophic and persevering Germans; but hitherto all their efforts have been fruitless.

**PAS'QUIN**, a name given to a mutilated statue which stands at the corner of the palace of Ursini, in Rome; and so called from the name of a cobbler famous for his sneers and gibes, and who diverted himself with passing jokes upon all the people who went through his street. After the death of this man, some workmen, who were digging up the pavement before his shop, found in the earth a statue of an ancient gladiator, well executed, but maimed: this they set up in the place where it was found, and by common consent named it Pasquin. Since that time, all satirical papers in that city are attributed to this figure, and either put into its mouth, or pasted on its body. Hence the word *pasquinade* for a lampoon. The difference between a *pasquinade* and a *satire* is, that the end of the latter is to correct and reform, while that of the former is only to ridicule and expose.

**PASS**, in military affairs, a strait narrow passage, which renders the entrance into a country difficult for an army.——*Pass*, among miners, a frame of tin boards set sloping for the ore to slide down.——*Pass of arms*, in chivalry, a bridge, road, &c. which the ancient knights undertook to defend. The knights who held a pass, hung up their arms on trees, pales, columns, &c. erected for that purpose; and such as were disposed to dispute the pass, touched one of the pieces of armour with his sword, which was a challenge the other was obliged to accept.——*Pass-parole*, in military affairs, a command given at the head of an army and communicated by word of mouth to the rear.——*Pass-word*, a secret word or countersign which enables any person to pass through military stations.——*Pass-par-tout*, a master-key; or a key that opens several locks belonging to the same house or apartment.

**PASSA'DE**, or **PASSA'DO**, in fencing, an advance or leap forward upon the enemy. Of these there are several kinds, as passes within, above, beneath, to the right, the left, and passes under the line, &c.——*Passade*, in the manege, is a turn or course of a horse backwards or forwards, on the same spot of ground.

**PASSAGE**, in navigation, the course pursued at sea; or the time of passing from one place to another; as, we had a passage in the British Queen, from England to America, in thirteen days.——*Passage*, in music, a succession of sounds forming a member or phrase in a composition.——*Right of passage*, in commerce, is an imposition or duty exacted by some princes, either by land or sea, in certain confined or narrow places in their territories, on all vessels, and even sometimes on persons or passengers coming in or going out of ports, &c.——*Birds of passage*, those birds which at certain seasons migrate, or pass from one climate to another. [See MIGRATORY BIRDS, &c.]

**PAS'SANT**, in heraldry, a term applied to a lion or other animal in a shield appearing to walk leisurely. When walking with his head *affronté*, or looking full-faced, it is termed *passant gardant*.——*En passant* (Fr.) by the way.

**PASSERES**, in ornithology, the sixth order of birds, having a conic, sharp beak, with bent and sharp claws; including pigeons, sparrows, blackbirds, swallows, &c.

**PASSERINE**, pertaining to sparrows or to the order of birds to which sparrows belong, the *Passeres*.

**PASSING-BELL**, the bell that is tolled at the hour of death, or immediately after death. The *passing-bell* was originally intended to drive away any demon that might seek to take possession of the *soul* of the deceased, on which account it was sometimes called the *soul-bell*. Mr. Ellis in his notes to Brand, quotes Wheatley's apology for our retaining this ceremony; "Our church," says he, "in imitation of the saints in former ages, calls on the minister, and others who are at hand, to assist their brother in his last extremity. In order to this, she directs, that when any one is passing out of this life a bell should be tolled," &c. Hence the proverb mentioned by Bede.:—

When the bell begins to toll,
Lord have mercy on the soul.

**PASSION**, or **THE PASSIONS**, strong feelings or emotions of the mind excited by an adequate cause, and existing in such strength as to engross the whole man, and resist the influence of every other cause of sensation. In order to form a clear notion of *the passions*, we must begin with rejecting the phrase that man is possessed of this or that number of passions, and say that he is possessed of *one* quality, that is, susceptibility, which is liable to be acted upon by this or that number of causes. Man, therefore, has not so many feelings, but one feeling, assuming different forms of appearance according to the impression it receives; and the number of passions is exactly that of the circumstances that are important to a sentient creature. Now, these, in a comprehensive point of view, are only of two kinds; those that contribute to its pleasure, and those that are productive of pain. It is for this reason that, according to some, man has only two passions; the desire of happiness, and the aversion to evil; but subdivided, each order has its genera, and each genus its species. The desire of happiness is separated into love, or the wish to possess that which will impart happiness; hope, which is the expectation of possessing it; and joy, which is the assurance of possession. The aversion to evil is separated into fear, which belongs to the dread of evil: grief, which belongs to the presence of it; and anger, which resents it. These, again, to which also other genera may be added, are distinguished into species; as, to fear belong terror and horror; and to an-

"WHERE STATESMEN ARE RULED BY FACTION AND INTEREST, THEY CAN HAVE NO PASSION FOR THE GLORY OF THEIR COUNTRY."—ADDISON.



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ger, envy, jealousy, hatred, and malice. Some think the most natural division of the passions is into pleasurable and painful:

"Love, hope, and joy, fair pleasure's smiling train;
Fear, grief, and hate, the family of pain."

——In a medical point of view, it may be observed that the passions of the mind chiefly affect the stomach, inverting its motion, and hindering digestion and chylification; from which disordered state of the economy many crudities arise, productive of various diseases.——In painting and sculpture, the various passions are indicated by the general attitude of the figure, but more particularly by the mental expression of the features.

PAS'SION-FLOWER (*passiflora*), in botany, a genus of climbing plants, class 20 *Gynandria*, order 5 *Pentandria*; containing numerous species, remarkable for the elegance and singular form of their flowers. They are all natives of warm foreign countries, and only one of them is sufficiently hardy to succeed well here in the open ground; the others requiring shelter and heat. Their stems are woody, or, more frequently, herbaceous, provided with tendrils, and bearing alternate simple or lobed leaves; the flowers are axillary, and supported on peduncles; the calyx is widely spreading, and divided into ten parts. To the base of the calyx is attached an interior crown, composed of a great number of filaments. The *passiflora cærulea*, or blue-rayed common palmated passion flower, has long slender stalks, ascending, upon support by their claspers, thirty or forty feet high, with one large palmated leaf at each joint, and at the axillas large spreading flowers, with whitish-green petals, and a blue radiated nectarium; succeeded by large, oval, yellowish fruit. It flowers from July until October; the flowers are very large, conspicuous, and their composition is exceedingly curious and beautiful; but they are only of one day's duration, generally opening about 11 or 12 o'clock, and gradually closing the next day, when they assume a decayed appearance, and new flowers succeed. In some Catholic countries this plant is held in great veneration, the religious making the leaves, tendrils, and different parts of the flower to represent the instruments of our Saviour's passion; hence the name.

PAS'SION-WEEK, the week immediately preceding the festival of Easter; so called, because in that week our Saviour's passion and death happened. The Thursday in this week is called *Maundy Thursday*, and the Friday, *Good Friday*. The "passion of Christ" is celebrated in the Catholic and most Protestant churches on the European continent during Lent, and particularly during Passion week, by sermons relating to the sufferings of the Saviour; and it is no inconsiderable treat to the lovers of sacred music who may be sojourning at Rome during the time, to hear the compositions of Palestrini, Pergolese, Allegri, &c., in the purest style, as performed in the *Capella Sistina*.

PAS'SIVE, in grammar, a term given to a verb which expresses passion, or the effect of an action of some agent; as, in Latin, *doceor*, I am taught; or, in English, as, she *is loved* and *esteemed*; he *is assailed* by clandestine foes.——*Passive obedience*, in civil polity, denotes not only quiet unresisting submission to power, but implies the denial of the right of resistance, or the recognition of the duty to submit in all cases to the existing government.——*Passive prayer*, among mystic divines, is a suspension of the soul or intellectual faculties, and yielding only to the impulses of grace.——*Passive principles*, in chemistry, earth and water, so called because their parts are not so swiftly moved as those of spirits, oil, and salt.——*Passive commerce*, trade in which the productions of a country are carried on by foreigners in their own ships; opposed to *active* commerce. [See NAVIGATION LAWS.]

PAS'SOVER, a solemn festival of the Jews, celebrated on the 14th day of the month following the vernal equinox, and instituted in commemoration of their providential deliverance on the night before their departure from Egypt, when the destroying angel, who put to death the first-born of the Egyptians, *passed over* the houses of the Hebrews, which were sprinkled with the blood of a lamb.

PASS'PORT, a written license from a king, governor, or other proper authority, granting permission or safe conduct for one to pass through his territories, or to pass from one country to another, or to navigate a particular sea without molestation. Also, a license for importing or exporting contraband goods or movables without paying the usual duties. In all passports it is usual to describe the persons, purposes, and destinations of the traveller, intended to show that their characters are good, and their objects in travelling lawful.

PASTE, a soft composition of substances. Thus, flour moistened with water or milk and kneaded, is used in cookery; and certain kinds of earth moistened and formed to the consistence of dough, is used in various arts and manufactures as a cement.

PASTE, an artificial mixture or kind of coloured glass made of calcined crystal, lead, and metallic preparations, so as to imitate gems.——In mineralogy, the mineral substance in which other substances are imbedded.

PAS'TERN, that part of a horse's foot under the fetlock to the heel.

PAS'TIL, in pharmacy, a dry composition of sweet-smelling resins, aromatic woods, &c. burnt to clear and scent the air of a chamber. There are also pastils for chewing, in order to render the breath sweet.——*Pastil*, among painters, a roll of paste made up of various colours with gum-water, in order to make crayons.

PASTOPH'ORI, in antiquity, priests among the Greeks and Romans whose office it was to carry the images along with the shrines of the gods at solemn festivals. The cells or apartments near the temples



THE MODERN JEWS OBSERVE IN GENERAL THE SAME CEREMONIES THAT WERE PRACTISED BY THEIR ANCESTORS, IN THE CELEBRATION OF THE PASSOVER.

ACCORDING TO CHRONOLOGISTS, THE PASSOVER WAS INSTITUTED MAY 4, 1491 B.C., AND CELEBRATED IN THE NEW TEMPLE, APRIL 16, 515 B.C.

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THE LEGAL OFFICERS OF THE CROWN ARE THE SOLE JUDGES AS TO WHAT PATENTS SHOULD OR SHOULD NOT BE GRANTED; THEIR AWARD IS FINAL.

A VALID PATENT MAY BE OBTAINED FOR AN INVENTION "NEW IN THIS REALM," THOUGH IT MAY HAVE BEEN PREVIOUSLY PRACTISED ABROAD.

where the *Pastophori* lived, were called *Pastophoria*.

PASTORAL, something descriptive of a shepherd's life; or a poem in which any action or passion is represented by its effects on a country life. The complete character of this poem consists in simplicity, brevity, and delicacy; the two first of which render an eclogue or idyl natural, and the last delightful. As the first strains of poetry must have been heard in the primitive times of the human race, and as a shepherd's life is congenial with this mode of occupation, we naturally consider poetry as having originated in the pastoral period; but the poetic idea of pastoral life, where all is purity and simplicity, is not supported by experience in past or present times.

PASTORA'LE, in ecclesiastical affairs, that part of theology which includes the execution of the duties of the clergyman, or the practical application of his theological knowledge. In the *pastorale* of a Roman Catholic priest, the chief part of the canon law is comprised; while that of the Protestant minister consists of principles addressed merely to his understanding, including certain rules which experience has shown to be important for the execution of clerical duties.

PASTURE, or PASTURE LAND, in agriculture, ground covered with grass appropriated for the food of cattle.——*Common of pasture*, is the right of feeding cattle on another's ground.

PA'STY, a preparation of venison, veal, lamb, or other meat; which being well boned, beaten to a pulp, and highly seasoned, is enclosed in a proper paste, and baked without a dish.

PATA'CHE [Sp.] a tender, or small vessel employed in conveying men or orders from one ship to another.

PATACOON', a Spanish coin of the value of 4*s*. 8*d*. sterling.

PATAVIN'ITY, a term used by classical scholars to denote a peculiarity of Livy's diction; so denominated from *Patavium* or *Padua*, the place of his nativity; but as authors are not agreed as to what this *patavinity* consists in, it may reasonably be concluded that it is one of those delicacies which are undiscernible when a language is no longer spoken.

PATE, in fortification, a kind of platform, resembling what is called a horse-shoe; not always regular, but generally oval, encompassed only with a parapet, and having nothing to flank it.

PATÉE or PATTE'E, in heraldry, a cross, small in the centre and widening to the extremities, which are broad.

PATE'LLA, in anatomy, a bone which covers the fore part of the joint of the knee, called also *rotula*, and popularly the kneepan. The patella is composed internally of a cellular substance, covered by a thin bony plate; but its cells are so extremely minute, that the strength of the bone is, upon the whole, very considerable. This bone defends the articulation of the joint of the knee from external injury: it likewise tends to increase the power of the muscles which act in the extension of the leg, by removing their direction farther from the centre of motion.——*Patella*, in conchology, a genus of shell-fish, with a simple shell, of a conic or other gibbous figure, and a very wide opening at the mouth or bottom; always applying itself firmly to some solid body, which serves it in the place of another shell; the animal inhabiting it is called *limax*.——The fossil remains of the patella are called a *patellite*.

PATENTS, or LETTERS PATENT (*open* letters), writings sealed with the great seal, granting a privilege to some person, or authorizing a man to do or enjoy that which he could not of himself. They are called *patent* on account of their form being open, ready to be exhibited for the confirmation of the authority delegated by them. Letters patent for new inventions are obtained by petition to the crown: they have to go through many offices, and are liable to opposition on account of want of novelty, &c.; and if obtained, and it can be proved that the invention was not new, or had been made public previously to the granting the patent, they may be set aside. In general, any invention of a new and useful art, machine, manufacture, or composition of matter not known or used before, or any new and useful improvement in these, is *patentable*. But the invention must be *material* and *useful;* while at the same time it must not be hurtful to trade generally, nor mischievous, nor immoral.—In the *Specification* the invention for which a patent is granted must be accurately ascertained, and particularly described. It must be so explicit, that mechanics may be able to make the machine by following the directions of the specification, without any new inventions of their own. The patent and specification are linked together by the title given to the invention in the patent, and the description of it in the specification, which latter must set forth the invention fully and correctly. The terms used must be clear and unambiguous; no necessary description must be omitted, nor what is unnecessary be introduced; and the invention must be described in the best and most improved state known to the inventor. If any one of these conditions be not complied with, the patent will be void. —*Duration of the Patent*. In England and the United States of America, patents are granted for a term not exceeding fourteen years. The time in England may be prolonged by a private act, and in the United States by act of congress. In France, patents are given for five, ten, or fifteen years, at the option of the inventor; but this last term is never to be prolonged without a particular decree of the legislature.—The *caveat* is an instrument by which notice is requested to be given to the person who enters it, whenever any application is made for a patent for a certain invention, which is therein described in general terms, and must be renewed annually. It simply gives notice that the invention is nearly com-



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pleted, with a request that, if any other person should apply for a patent for the same thing, the preference may be given to him who entered it.—*Expense of Patents.* The expense of stamps, fees, &c. may be estimated at 120*l.* for England, 100*l.* for Scotland, and 125*l.* for Ireland; it being necessary that separate patents should be taken out for each, if it be intended to secure the privilege for the three kingdoms.

PA'TERA, in architecture, an ornament frequently seen in the Doric frieze, and in the tympans of arches. The patera was a small dish or vase used by the Romans in their sacrifices, in which they offered their consecrated food to the gods, and with which they made libations; and hence, as the Doric was used for temples, it became an ornament of that order. It was also enclosed in urns with the ashes of the dead, after it had been used in the libations of wine and other liquors at the funeral.

PATERNOSTER, the Lord's prayer, so called from the two first words thereof in Latin. It is also sometimes used for a rosary or string of beads, used by Roman catholics in their devotions; but more especially for every tenth large bead in the said rosary; for at this they repeat the Lord's prayer; and at the intervening small ones, only an *Ave Maria*.——In architecture, the same term is used for an ornament cut in the form of beads, either oval or round, for astragals, &c.——*Paternoster cross*, in heraldry, a cross represented on the escutcheon as if made with beads.

PATHETIC NERVES, in anatomy, a pair of very small nerves which arise in the brain, and run to the trochlear muscle of the eye. These nerves have obtained the name *pathetic*, from their serving to move the eyes in the various passions.

PATHOGNOMON'IC, in medicine, a term given to those symptoms which are peculiar to or exclusively characteristic of a particular disease.

PATHOG'NOMY, that science which treats of the signs by which human passions are indicated.

PATHOL'OGY, that branch of medicine which explains the nature of diseases, their causes and symptoms. Its objects are to ascertain the various symptoms which characterize the disorders of each organ of the body, and especially the diagnostic and pathognomonic symptoms, which afford the means of discriminating between diseases that resemble each other; to determine the causes, both predisposing and exciting, by which diseases are induced; and to teach the indications of cure, and the nature and operation of the remedies adapted to the various circumstances and periods of diseases.

PATHOS, language capable of moving the tender passions, and of exciting the finest emotions of the soul.

PATIENCE, the quality of enduring affliction, pain, persecution, or other evil, without murmuring or fretfulness. It may spring from constitutional fortitude, from a noble and heroic pride, or from a pious submission to the divine will.

PATIENT, one who is under the direction of a physician, or other medical practitioner, for the cure of any disorder.——*Patient*, in physiology, that which receives impressions from external agents; or whatever is passively affected.

PA'TIN, in the Romish church, the cover of the chalice, used for holding particles of the host.

PATRES CONSCRIPTI, a name given to the Roman senators in general, though at first it was applied to a particular part of that body. The hundred appointed by Romulus were called simply *Patres*; a second hundred added by Romulus and Tatius upon the union of their people, were denominated *Patres minorum Gentium*; a third hundred being afterwards added by Tarquinius Priscus, the two latter classes were called *Patres Conscripti*, because they were written down or put upon the list with the original hundred of Romulus.

PATRIARCH, properly signifies the head or chief of a family. The name of patriarchs is generally confined to the progenitors of the Israelites who lived before Moses, Abraham, Isaac, Jacob, &c.; or to the heads of families before the flood, as, the antediluvian *patriarchs*. The appellation has from hence been transferred to the bishops of the first churches of the East; as, the patriarchs of Antioch, Alexandria, Jerusalem, Constantinople.——*Patriarchal cross*, in heraldry, a cross appropriated to the dignity of a patriarch, as the triple crown was to that of the pope. The shaft of this cross is twice crossed, the lower arm being longer than the upper one.

PATRI"CIAN, in Roman history, a title given at first to the descendants of the senators whom Romulus created, and called *patres*, "fathers." It was afterwards enjoyed by those who became senators by other channels than that of hereditary claim: but the dignity of the patricians was lessened by the fall of the republic, the civil wars, and the establishment of the imperial dignity.—The word *patrician*, in its general and modern acceptation, signifies noble; senatorial; not plebeian.

PATRICK, St., *Order of*, an Irish order of knighthood, instituted by George III. in 1783, which is the only one belonging to Ireland, but it is the most splendid of any.

PA'TRIOT, one who sincerely loves his country, and who, as a proof of that love, exerts his best energies in contributing to his country's welfare. In the Latin of the middle ages, *patriota* signified a native, in contradistinction to *peregrinus*, a foreigner, that is, one who did not enjoy the rights of citizenship. As the native, or citizen, was considered to be attached by his interests to the commonwealth, the word gradually received the meaning of a citizen who loves his country. Like many other words, its true meaning has at times been sadly perverted, or irreverently used. In the tumult





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of political agitation, how often is the contemplative observer compelled

"To see a band called *patriot* for no cause,
But that they catch at popular applause!"

PAT'RIOTISM, the love of one's country—the noblest passion that animates the breast of a true citizen, either in defending it from foreign enemies, or in protecting its rights and maintaining its laws and institutions in vigour and purity when assailed by domestic foes.

PATRO'L, in war, a round or march made by the guard in the night-time, to observe what passes, and to secure the peace and safety of a city or camp, or other place. The patrol generally consists of a body of five or six men, detached from a body on guard, and commanded by a serjeant.

PAT'RON, in its most general sense, signifies one that specially countenances and supports another, or lends his aid to advance the interests of some undertaking; as, a *patron* of the fine arts; the *patrons* of a charitable institution, &c.——*Patron (patronus)*, among the Romans, was an appellation given to any person in power, under whose protection a few inferiors put themselves, under certain conditions of obedience and personal service. The persons protected were called *clients*. The duty of the *patronus* was to be their clients' counsellors in difficult cases, their advocates in judgments, their advisers in matters of doubt, and their overseers in all their affairs. *Patron* was also a title conferred on a master who had freed his slave; the relation of patron commencing when that of master expired. The patron was legal heir to his freed-men, if they died intestate, or without lawful issue born after their freedom commenced. By the Papian law, if a freed-man's fortune amounted to ten thousand sesterces, and he had three children, the patron was entitled to a child's portion.——*Patron*, in the canon and common law, a person who, having the advowson of a parsonage, vicarage, or other spiritual promotion, belonging to his manor, has the gift and disposition of the benefice, and may present to it whenever it becomes vacant.——*Patron*, in the church of Rome, a guardian or saint, whose name a person bears, or under whose protection he is placed, and whom he invokes: or a saint, in whose name a church or order is founded.——*Lay patronage* is a right attached to a person either as founder or as heir of the founder, or as possessor of the see to which the patronage is annexed. *Ecclesiastical patronage* is that which a person is entitled to by virtue of some benefice which he holds.——*Arms of patronage*, in heraldry, are those arms on the top of which are some marks of subjection and dependence.

PATRONYM'IC, a term applied to such names of men and women as are derived from those of their parents or ancestors; as *Tydides*, the son of Tydeus.

PAULI'CIANS, in ecclesiastical history, a branch of the ancient Manichees, so called from their founder, one Paulus, an Armenian. For several centuries they suffered great persecution, and were at length wholly exterminated.

PAUL'S, ST. This beautiful cathedral, built upon an eminence in London, to the north of the Thames, was completed in thirty-five successive years, under one architect, Sir Christopher Wren; one master mason, Thomas Strong; and one bishop of London, Dr. Henry Compton. Its length is 500 feet from east to west; width, 285 feet from north to south; and height, 340 feet. The weight of the ball is 5,600 lbs; and that of the cross 3,360 lbs. The height to the cross from the centre of the floor is 404 feet. The iron balustrade round the church-yard is three furlongs and one-fifth. The old Gothic structure which before occupied this site, was built on the foundation of an old temple of Diana, 610; burnt, 964; rebuilt, 1240, having been 150 years in building; its steeple fired by lightning, 1443; rebuilt, having been in great part burnt down, 1631; and totally destroyed by fire in the conflagration of 1666. The first stone of the present building was laid, June 21, 1675; and it was finished and opened, Dec. 2, 1697; having cost nearly 1,500,000*l*. The building is of Portland stone, in the form of a cross. Two rows of massy pillars divide the interior into a nave and side aisles. The west front towards Ludgate-street has an elevated portico, forming the grand entrance, of twelve Corinthian columns, with an upper portico of eight pillars of the Composite order, supporting a triangular pediment, with an entablature representing, in relief, the conversion of St. Paul. The dome is one of the most remarkable points of sight in the view of London. But the interior decoration of this building does not correspond with its exterior magnificence, although many monuments and statues to the illustrious dead (the work of the last half century) considerably relieve that feeling of vacancy, which its vast unornamented walls excite.

PAU'PERISM.—Pamphlet after pamphlet has been published on this appalling subject, and volume has succeeded volume. Session after session have legislators pathetically doled out their nightly lamentations; while select committees have pondered over the repulsive evidence before them; and "reports," *ad infinitum*, have appeared, detailing the horrors of pauperism, deprecating the enormities of mendicity, and suggesting plans for ameliorating the condition of the poor. Then come commissioners, in all the panoply of judicial and executive authority, to cleanse this Augean stable; and in lieu of the parochial workhouses of former days, and the discretionary power of overseers to afford temporary assistance to the casual sufferer, those huge bastiles, denominated Unions, rear their dismal heads throughout the land; the paupers are consigned to the care of "guardians" destitute of authority, and their pressing necessities left to "relieving officers" unfurnished with the means of



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administering relief. The tide of wealth rolls on, and luxury is at its height; splendid edifices rise around us, as if at the wand of the magician; the flag of British commerce floats proudly in the breeze; and our waving corn-fields attest the bounty of Him who sends us food in due season. Yet pauperism, unmitigated pauperism, still exists. To what, to whom shall the evil then be attributed? An able cotemporary, whose remarks so entirely coincide with our sentiments that we unhesitatingly adopt them, says, "The pauperism of England is to be attributed, in a great measure, to the reckless and improvident habits of its labouring poor. But the greatest prudence, united with the greatest industry on the part of the poorer classes, will not always save them from want. This is frequently the case in England, where wages are low compared with the expenses of living, so that an ordinary labourer often cannot, in the period of his life when he can do the greatest amount of labour, save any thing against the time of decrepitude or sickness; and the children of suffering parents must suffer with them. The question in regard to such is, By what means shall their present distress be relieved? The economists of the *new school* (as it is sometimes called) say, that they are to be abandoned to starvation. But a doctrine so abhorrent to our nature is only a hideous theory, which cannot enter into the laws or habits of any people until human nature shall be sunk into brutal hard-heartedness. The dictates of religion, conscience, and compassion, enjoin upon us to give relief; and the only questions practically discussed relate to the mode and degree of the assistance to be afforded, and the measures which ought to be adopted for reclaiming such as bring their misery upon themselves by vice and idleness. The two great objects are—remedy of present suffering and prevention of future; and these two objects are very much blended, for it is a great rule so to administer succour as not to encourage idleness or vice. In the case of young subjects of relief, the greatest charity is that which is directed to the forming of good habits, and giving them instruction in useful arts. With older subjects there is very little hope of any great amelioration of character. But even with these, a regard to the influence upon their habits is constantly to be kept in view in administering to their present wants. One essential condition is, that they should be made to labour, and thus contribute, as far as possible, to their own support. As to the sick and infirm, the rest of the community are bound to support them, by a just assessment of the expenses."

PAUSA'NIA, in Grecian antiquity, a festival, in which were solemn games, wherein nobody contended but free-born Spartans. It was instituted in honour of Pausanias, the Spartan general, under whose conduct the Greeks overcame Mardonius, in the celebrated battle at Platæa.

PAUSE, a character of time in music, marked thus 𝄐, denoting that the note over which it is placed is to be drawn out to a greater length than usual, or to be embellished with appoggiatures, shakes, or other graces.

PAVAN', a grave and formal dance among the Spaniards. In this dance the performers wheel round before each other, the gentlemen dancing with cap and sword, princes in their robes, and the ladies with long trains; the motions being slow and stately.

PAVEMENT, a floor or covering consisting of stones, bricks, or other suitable material, laid on the earth in such a manner as to make a hard and convenient surface for horses, carriages, or foot-passengers.—Pavements of lava, with elevated side walks, are found at Herculaneum and Pompeii; but the oldest paved city of which there is any account, is that of Cordova, in Spain, which was paved with stones so early as the middle of the ninth century. London, it is said, was not paved till the 12th century, and then only very partially; nor was it until five more centuries had passed away that this kind of street accommodation was by any means general. But now—thanks to the spirit of improvement—we have granite flag-stones of huge dimensions, and asphaltic surfaces of all qualities, for the humble pedestrian; while our carriages silently glide along on pavements made of wood! In short, hosts of patriotic paviors are in full action to facilitate the progress of their fellow-citizens; and metropolitan companies, wooden and asphaltic, are every day starting into existence, with the laudable intention of *mending our ways*.—As these novel modes of paving the streets are every day coming more into use, and as it is not improbable that ere long a great change will be effected by some of the parties engaged in this work of rivalry, we think it desirable to insert an account of the various experiments which were made in Oxford-street, in January, 1839. The whole space between Charles-street and Tottenham-court-road was occupied by twelve different specimens, which were completed in the following order, commencing at Charles-street, viz., 40 feet of Robinson's Parisian bitumen, 32 feet laid in straight courses, and 16 feet diagonally; 74 feet of parish stone paving, 54 feet of which was laid in straight courses, the stones nine inches deep, and the interstices filled up with Claridge's asphalte, the remaining 20 feet consisting of stones only 4½ inches deep, but laid diagonally, and filled up with the same composition; 60 feet of the Bastenne Gaujac bitumen, part laid in straight courses, and part diagonally; 135 feet of parish stone paving, divided into three sections in the following order: 1st, 70 feet of dressed Aberdeen granite, with concrete bottom, and the joints grouted with lime and sand; 2nd, 40 feet of the same laid diagonally; and 3rd, 25 feet of dressed Aberdeen granite, without concrete bottom, the joints filled in with fine gravel; this was followed by 50 feet of the Scotch asphaltum, entirely the produce of this country, laid down in straight courses; 60 feet of Mr. Stead's pavement of wooden blocks of a



NO LARGE EUROPEAN CITY, ROME ONLY EXCEPTED, HAD THE ADVANTAGE OF PAVED STREETS TILL TOWARDS THE TWELFTH OR THIRTEENTH CENTURY.

THE FIRST LONDON PAVING ACT PASSED IN 1762; PRIOR TO THIS, EACH INHABITANT PAVED BEFORE HIS OWN DOOR, WITH ANY MATERIALS HE CHOSE.

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sexagonal form, 12 inches deep, divided into three compartments—one prepared with Kyan's patent, part dipped in, and joints run with asphalt, and part without any preparation whatever; the last specimen, at Tottenham-court-road, was 60 feet of the Val de Travers bitumen, a portion of which consisted of square blocks laid in straight courses, and the remainder of a layer of clean Guernsey chippings, cemented together by boiling asphalt run among them nearly to the surface, a face made with asphalt, merely showing the chippings here and there in patches. The whole work presented a most even and beautiful road. The portion, however, to which attention was more particularly directed, was that of the wooden blocks, the noiseless tendency of which made the vehicles passing along appear to be rolling over a thick carpet. It may be necessary to add, that several other methods of constructing and laying down the wooden pavement have recently been tried in different parts of the town with still greater success. Some of these are on the principle of fastening the blocks to each other by equal angular pressure; others are held together by pegs and grooves, the object of each being to avoid all danger from slipperiness and displacement of the blocks; while, from their being cut from the trunks of trees and laid with the grain uppermost, their durability appears unquestionable.

PAVIL'ION, in architecture, a kind of turret or building, usually insulated and contained under a single roof; sometimes square, and sometimes in form of a dome. Sometimes a pavilion is a projecting part in front of a building; sometimes it flanks a corner.——In military affairs, a tent raised on posts. The word is also sometimes used for a flag, ensign, or banner.

PA'VO, in astronomy, a constellation in the southern hemisphere, consisting of fourteen stars. [For *Pavo*, the systematic name of the PEACOCK, see the latter word.]

PEA, in botany, a plant and its fruit, of the genus *Pisum*, of many varieties. It has been cultivated from remote antiquity, and forms one of the most valuable of culinary vegetables, being nutritious, especially when green, in which state they form an agreeable article of food to most persons. This plant has a papilionaceous flower, and the pericarp is a legume, called in popular language a *pod*. They are sometimes ground into flour, and mixed with that obtained from wheat, but the bread is thereby rendered heavy and unwholesome. In the plural we write *peas* for two or more individual seeds, but *pease* for an indefinite number in quantity or bulk.

PEACE, in a general sense, signifies a state of tranquillity, or freedom from disturbance. In a political sense, freedom from war with a foreign power, or from internal commotion. It likewise denotes a calm and tranquil state of the mind, which is the effect of a clear conscience. Also that quiet, order, and security which is guaranteed by the laws. This latter is termed the *peace of the king*, and consists in that peace or security, both of life and goods, which the sovereign promises to all his subjects, or others who are under his protection: such is the peace of the king's highways, which consists in the freedom from all annoyance and molestation; to which may be added the peace of the plough, whereby both the plough and plough cattle are secured from distress warrants.

PEACH, in botany, a tree and its fruit, of the genus *Amygdalus*, of many varieties. It belongs to the natural family *rosaceæ*: the leaves are alternate, simple, lanceolate, acute, and finely serrated: the flowers appear before the leaves, are very beautiful, and diffuse an agreeable odour. The fruit is a large downy drupe, containing a stone which is deeply furrowed and rough externally, which character distinguishes it both from the almond and the apricot. It is, perhaps, the most exquisite of the fruits of temperate climates, and, if not eaten to excess, one of the most wholesome. It originally came from Persia, but it was not introduced into England till about the year 1660.

PE'ACOCK, in ornithology, a large and beautiful fowl of the genus *Pavo*, originally a native of India. The name properly belongs to the male of the species, but it is popularly applied to the species in general; though the female is, for distinction's sake, called a *peahen*. Like other domesticated birds, the peacock exhibits several varieties. The ordinary length of this splendid bird, from the tip of the bill to that of the full-grown, fan-expanded tail, is about four feet. The female is rather less; and her train is not only very short, but destitute of those brilliant hues and striking beauties which adorn the male: her crest too is shorter, and her whole plumage partakes of a cinereous hue. When pleased or delighted, the peacock erects his tail, unfolds his feathers, and frequently turns round, as if to catch the sunbeams in every direction, accompanying this movement with a hollow murmuring. At other times his cry is very disagreeable, and often repeated, especially before rain. Every year he sheds his plumes, and courts the most obscure retreats till the returning spring renews his lustre.——The *Peacock Pheasant*, or *Thibet Peacock*, which inhabits China and the mountains that separate Thibet from Hindostan, is a singularly elegant bird, rather larger than the common pheasant. The tail is composed of two distinct ranges of long feathers, the undermost being the true tail. These feathers are capable of being erected and displayed like a fan when the bird is agitated, but at other times they remain in a horizontal position.

PEA'COCK-FISH, in ichthyology, a fish found in the Indian seas, the body of which is of an elliptical form, and the colours so richly marked and agreeably mixed, that they resemble the elegance of the peacock's tail.

PEAR, in botany, the fruit of the *pyrus domestica*, a tree growing wild in many



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parts of Europe; but of which many kinds are cultivated in all temperate climates.

PEARL, in natural history, a hard, white, shining body, usually of a globular, but sometimes of a pear-shape, found in a testaceous fish commonly called the pearl-oyster, and esteemed a gem of high value. They are found in some parts of the globe in clusters of a great number, on rocks in the depths of the sea: and such places are called *pearl banks*. Some naturalists consider pearls to be unfructified eggs; others describe them as mere concretions of the juice of which the shell has been formed, and with which the animal annually augments it. Reaumur remarks, that no one who is in the least degree acquainted with the composition of animal bodies, is ignorant that their juices are capable of producing hard substances; and he justly observes, that it is far from extraordinary that a fish which has a sufficient quantity of stony juice to build, thicken, and extend a shell, should have enough to form these stones, if it happen to overflow, or burst into any cavity of the body, or among the membranes. The seas about the East-Indies and America yield pearl-fish in great abundance; and they are found with good pearls in several parts of Europe. In the east, the coasts of the island of Ceylon and the Persian gulf are the parts most celebrated for pearl fisheries; and in the west, the coast of Terra-firma and the gulf of Mexico. The European pearls are chiefly found on the coast of Scotland and in a river of Bavaria.——*Pearl-fishing in the East-Indies.* This occupation employs a considerable number of persons at two seasons of the year. The first is in March and April, and the second in August and September. Each bark puts off from the shore at sunrise, with a land breeze which never fails, and returns to the shore at noon, with a sea breeze by which it is succeeded. To collect the shells is the business of divers, brought up to the dangerous occupation from early youth. They descend from their boat with a rope fastened round their body, and a stone of 20 or 30lbs. weight attached to the foot to sink them. Generally they have to descend from eight to twelve fathoms before they reach the shells. Their nostrils and ears are stopped up with cotton; to the arm a sponge, dipped in oil, is fastened, which the diver now and then brings to his mouth, in order to draw breath without swallowing water. Every diver has, besides, a knife to loosen the shells, and a little net or basket to collect them. When he has filled this, or is unable to stay any longer under water, he quickly unfastens the stone, shakes the line, and is drawn up by his companions. There are others, however, who use the diving-bell. The shells thus obtained are put into vessels, where they remain till the body of the animal putrefies, when they mostly open of themselves. Those which contain any pearls have generally from eight to twelve. After being dried they are passed through nine sieves of different sizes. The worth of a pearl is in proportion to its magnitude, round form, polish, and clear lustre. Sometimes, but very rarely, a pearl is found as large as a nutmeg. When the pearls are only about the size of small shot they are denominated *seed* pearls, and are of little value. One of the most remarkable pearls of which we have any authentic account was bought by Tavernier, at Catifa, in Arabia, a fishery famous in the days of Pliny, for the enormous sum of 110,000*l*. It is pear-shaped, regular, and without blemish; it is from two to three inches long, and nearly one inch in diameter. Even in antiquity pearls were an object of luxury. One, worth about 84,000*l*. of our money, Cleopatra is said to have dissolved at a banquet and drank off to Antony's health.——*Artificial pearls* are small globules or pear-shaped spheroids of thin glass, perforated with two opposite holes, through which they are strung, and mounted into necklaces, &c., like real pearl ornaments. The liquor employed to imitate the pearly lustre is called *essence d'orient*, which is prepared by throwing into water of ammonia the brilliant scales, or rather the lamellæ, separated by washing and friction of the scales of the blay, a small river-fish. There are various other methods of imitating pearls, in which the French are said to excel.

PEARL'-ASH, a kind of fixed alkaline salt, prepared chiefly in America, Germany, Russia, and Poland, by melting the salts out of the ashes of burnt wood; and, having again reduced them to dryness, evaporating the moisture, and calcining them for a considerable time in a furnace moderately hot. Pearl-ashes are much used in the manufacture of glass, and require no preparation, except when very great transparency is required.

PEAT, a congeries of vegetable matter, in which the remains of organization are more or less visible; consisting of trunks of trees, of leaves, fruits, stringy fibres, and the remains of aquatic mosses. It occurs in extensive beds, called *peat-mosses*, occupying the surface of the soil, or covered to the depth of a few feet with sand, gravel, &c. It is the common fuel of large districts of Wales and Scotland, and of some parts of England where coals are very dear. Lord Willoughby de Eresby has lately perfected a peat-compressing machine, first produced by him in 1837. In some experiments which took place at the manufactory of Mr. Napier, the engineer, specimens of peat that had been pressed two days previously, were shown to be perfectly dry, heavy, and consistent; and some that had been preserved for a year were scarcely to be distinguished from coal. As fuel for the manufacture of the finest cutlery, this peat is superior to coal, probably from being without sulphur. It can always be obtained by the lowly population of a large portion of the British empire with infinitely less cost of labour and time than the mere cutting and drying of turf or peat. It may also be advantageously employed in lime-burning, and in



PHILIP II. OF SPAIN HAD A PEARL, PERFECT IN ITS SHAPE AND COLOUR, AND OF THE SIZE OF A PIGEON'S EGG, VALUED AT 80,000 DUCATS.

PEARLS WERE FORMERLY USED IN MEDICINE; BUT THEIR MEDICAL OPERATION IS NOT DIFFERENT FROM THAT OF ANY OTHER CALCAREOUS EARTH.

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fires or furnaces, working machinery, or raising of steam.

PEB'BLES, in mineralogy, a genus of fossils, defined to be stones composed of a crystaline matter debased by earths of various kinds in the same species, and then subject to veins, clouds, and other variegations, usually formed by incrustation round a central nucleus, but sometimes the effect of a simple concretion.

PEC'ARY, or PEC'CARY, in zoology, a South American quadruped, in general appearance resembling a hog, but with a body less bulky, shorter legs, and bristles thick and strong, like the quills of the porcupine. Its colour is black and white, and on the hind part of its back there is a small orifice from which issues a liquor of a strong and disagreeable odour.

PECH'BLEND, or PITCH'BLEND, in mineralogy, ore of uranium; a metallic substance of a blackish or deep iron-gray colour, sometimes spotted with red: it is found in masses in Swedish and Saxon mines, and is generally stratified with other minerals.

PECK, a dry measure of eight quarts, being the fourth part of a bushel.

PEC'ORA, in zoology, an order of animals in the Linnæan system, under the class mammalia, comprehending such as have cloven hoofs, live on grass, chew the cud, and have four stomachs; as, the antelope, the camel, camelopard, stag, sheep, ox, cow, &c.

PEC'TEN, in conchology, a genus of bivalve shells, shutting close all round, and usually of a depressed form; but having one or two processes, called ears, issuing from the head of the shell near the hinge. ——The greater part of the pectens are striated; the ribs or ridges running in straight lines like the teeth of a comb; whence the name.

PECTINATED, or PEC'TINATE, in botany, an epithet for a sort of pinnate leaf, in which the leaflets are toothed like a comb.——A mineral is said to be *pectinated*, when it presents short filaments, crystals, or branches, nearly parallel and equidistant.

PECTORAL, an epithet for whatever relates to the breast: hence, *pectoral* medicines are those which relieve diseases of the breast or lungs, &c.

PEC'ULATOR, one who defrauds the public by appropriating to his own use money entrusted to his care.

PECU'LIAR, in the canon law, a parish or church that has jurisdiction within itself, and is competent to the granting probates of wills and letters of administration, exempt from the ordinary or bishop's court. ——*Court of Peculiars*, a branch of the court of arches, belonging to the archbishop of Canterbury, which takes cognizance of matters relating to parishes that have a peculiar jurisdiction.

PED'ALS, in music, the keys played by the feet (hence the name), by which the deepest bass pipes of an organ are put in motion. A *pedal* is also used under a piano, in order to strengthen and prolong the tones. In a harp, the pedal serves to elevate the notes half a tone.

PED'ATE, in botany, an epithet applied to a leaf in which a bifid petiole connects several leaflets on the inside only.

PED'ATIFID, in botany, an epithet for a leaf whose parts are not entirely separate, but connected like the toes of a water-fowl.

PED'ESTAL, in architecture, the lowest part of a column, being that which serves as its stand. It consists of three parts, viz. a trunk or dye, which forms the body; a cornice, the head; and a base, the foot of the pedestal.

PED'ICLE, in botany, the ultimate division of a common peduncle; the stalk that supports one flower only when there are several on a peduncle.

PEDIC'ULUS, in entomology, the louse, a genus of insects of the order *Aptera*. Some of the insects of this genus, of which there are seventy or eighty species, infest the bodies of quadrupeds, some infest birds, some insects, besides which there is the *Pediculus humanus*.

PED'IMENT, in architecture, a kind of low pinnacle serving to finish a frontispiece, and which finishes the fronts of buildings, or is placed as an ornament over gates, doors, windows, or niches. The pediment is ordinarily of an angular form, but sometimes it forms the arc of a circle. The parts of a pediment are, 1. the tympanum; 2. the cornice, which crowns it; and 3. the entablature, which serves it as a base or scale.

PEDOBAP'TIST, or PÆDOBAP'TIST, one that holds to the practice of infant baptism. Most denominations of Christians are, in fact, pædobaptists.

PEDOM'ETER, in mechanics, an instrument by which paces are numbered, and the distance from place to place ascertained. It also marks the revolutions of wheels. This is done by means of wheels with teeth and a chain or string fastened to the foot or to the wheel of a carriage; the wheels advancing a notch at every step or at every revolution of the carriage wheel.

PEDUN'CLE, in botany, the stem or stalk that supports the fructification of a plant, and of course the fruit. A *pedunculate* flower is one which grows on a peduncle.

PEER, a nobleman or peer of the realm. The lords of parliament are the peers of each other; for whatever formality of precedence may attach to the title of duke, earl, marquis, or viscount, it is a *barony* which conveys the right to a seat in parliament, and confers every privilege annexed. It is as a baron, not as a duke, bishop, &c. that a peer sits in parliament; and the parliamentary rights are, at the present day, the essence of nobility. In compliance with an ancient practice, peers are sometimes still created by titles which convey the idea of local rights to which they have in reality no pretension; but though this is a mere form, the rank they gain is not an empty

THE WORD "PEER" WAS ANCIENTLY APPLIED TO THE VASSALS OF THE SAME LORD, BECAUSE THEY WERE ALL EQUALLY BOUND TO SERVE HIM.

THE FRENCH PEERAGE WAS ABOLISHED BY THE REVOLUTION; BUT LOUIS XVIII. RE-ESTABLISHED IT UPON THE MODEL OF THE ENGLISH, IN 1814.



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one: it is that of an hereditary legislator of the realm. A peer is not to be put upon any inquest, even though the cause have a relation to two peers; and where a peer is defendant in a court of equity, he is not to be sworn to his answer, which is to be received upon the faith of his honour; but when he is to answer to interrogatories, or to make an affidavit, or to be examined as a witness, he is to be sworn.——*Trial of a Peer.* It is a maxim of the first importance, that those public men who, in a free country particularly, will always be liable to the dangers of political animosity, should be secured against possible popular injustice; and for this reason, as well as because, with the rest of his fellow subjects, he claims to be tried by his equals, a temporal peer must be arraigned, whether on a charge of treason or of felony, before the house of which he is a member. On occasion of such a trial, all the lords, with the exception of the bishops, are to be summoned at least twenty days previous to its commencement. The course of proceeding is as follows: after the indictment is allowed, the sovereign, by commission under the great seal, appoints one of the peers, and usually the chancellor, to be high steward, who sits as judge. To bring the indictment before the lord high steward, a writ, called a *certiorari*, is issued out of the court of chancery and the prisoner is brought by another writ. The high steward assigns a day and place of trial; and twelve of the peers *must* be present. At the time and place appointed, the high steward being seated in the customary state, the royal commission read, and other ceremonies performed, he declares to the prisoner at the bar the cause of the assembly, assures him of justice, and encourages him to answer without fear to the charge that is to be preferred against him. The indictment is then read and the prisoner arraigned. After the evidence for the prosecution and the answer have been heard, the prisoner is ordered to withdraw from the bar, and the lords retire, in the manner of a common jury, to deliberate on their verdict. On their return, the high steward openly demands of each lord whether the prisoner, calling him by his name, be guilty of the crime for which he is arraigned? and each lord, laying his right hand upon his left breast, separately answers, "Guilty," or "Not Guilty, upon my honour." If, by a majority of votes, the prisoner be found guilty, he is brought to the bar again, and the high steward acquaints him with the verdict of his peers, and passes sentence and judgment accordingly; or acting as he does by commission, the high steward may take time to advise upon the judgment and his office continues till that be passed. The appointment of a high steward only takes place when the parliament is not sitting. If the trial occurs during the session, it is said to be in the *high court of parliament*; the peers officiate at once as jurors and judges, and their speaker collects the votes: when the parliament is not sitting, the trial is said to be in the court of the *high steward of England*. There are two peculiarities attending the trial of a peer: 1st. the number of jurors is greater than ordinary, every peer having a right to sit; 2ndly. unanimity is not required, but the decision depends upon the majority, which, however, must amount to twelve.

PEER'ESS, a woman who is noble by descent, creation, or marriage. If a peeress by descent or creation marries a person under the degree of nobility, she still continues noble; but if she has obtained the dignity by marriage only, by a subsequent marriage with a commoner she loses it; though, by the courtesy of England, she always retains her title.

PEG'ASUS, in astronomy, a constellation in the northern hemisphere. It derives its name from *Pegasus*, the winged horse, which, according to the Greeks, sprung from the blood of the Gorgon Medusa, after Perseus, a son of Jupiter, had cut off her head.

PELA'GIANS, a Christian sect who appeared about the beginning of the fifth century. Pelagius, the founder of it, was born in Wales, and his real name was Morgan, which in the Welsh language signifies *sea born*; whence the Latin name Pelagius. Some of our ancient historians pretend that he was abbot of Bangor; but this is impossible, because the British monasteries were of a later date. St. Austin gives him the character of a very pious man, and a person of superior birth. Among other tenets of belief, the Pelagians denied original sin, maintaining that Adam would have died, whether he had sinned or not; while they asserted the doctrine of free will, and the merit of good works.

PELECA'NUS, in ornithology, the generic term in the Linnæan system for the sort of birds of which the pelican is the principal species: it comprehends also the cormorant or corvorant, the man-of-war bird, and the gannet.

PEL'ICAN, a bird larger than a swan, inhabiting marshy and uncultivated places, particularly islands and lakes where sedges abound. The bill is straight, except at the point, and it has a skin reaching down the neck, which forms a pouch capable of being distended so as to hold many quarts of water. The pelican has a peculiar tenderness for its young, and feeds them with fish that have been macerated for some time in her pouch: hence has arisen the fabulous story of its feeding them by drawing blood from the parent breast. They are gregarious, very fond of fish, and when harassed or pursued, readily reject the contents of their stomach, like the gull tribe. ——*Pelican*, in chemistry, a kind of double glass vessel, or alembic, used in distilling liquors by circulation. It is designed for continued distillation and cohobation.

PELLA'GRA, in medicine, the name given to a disease, or complication of diseases, common to the inhabitants of the Lombardo-Venetian plains. It begins by an erysipelatous eruption of the skin, and is accompanied by remarkable lassitude,





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THE OLDEST CERTAIN ACCOUNT WE HAVE OF PENS AS INSTRUMENTS FOR WRITING, IS IN A PASSAGE OF ISIDORE, WHO DIED A.D. 636.

melancholy, moroseness, and hypochondriasis, with an evident propensity to suicide. As the disease advances it assumes various forms of mania, and the wretched sufferer generally endures the extremity of torture before death closes the sad scene. It is almost confined to the agricultural population and the poorest classes.

PEL'LICLE, the thin and skin-like substance found in egg-shells and other animal productions.——Among chemists, it signifies a thin saline crust formed on the surface of a solution of salt evaporated to a certain degree, and which consists of saline particles crystalized.

PEL'LITORY, in botany, the name of several plants of different genera. Of these the *pellitory of the wall*, or common pellitory, of the genus *Parietaria*, is the principal. The *bastard pellitory* is of the genus *Achillea*.

PELLS, Clerk of the, an officer of the English exchequer, who enters every teller's bill on the parchment rolls, the roll of receipts, and the roll of disbursements.

PELO'RIA, a Thessalian festival, not unlike the Roman saturnalia.

PELT, a raw hide, or skin of a beast with the hair on it.

PEL'TA, in antiquity, a small, light, and manageable buckler. Among others, the Amazons are particularly mentioned as having used it.

PELTATE, in botany, having the shape of a target or round shield, as a *peltate* stigma; having the petiole inserted in the disk, as a *peltate* leaf.

PEN, an instrument used for writing, made either of the quill of some large fowl, of metal, or of any other material. In ancient times reeds were split and shaped to a point similar to our pens, but quills are not supposed to have been used for writing with till the sixth century. As pens, however, have now become an important branch of manufacture, a short account of them may not be uninteresting. England is chiefly supplied with quills from Russia and Poland, where immense flocks of geese are fed for the sake of their quills; and about twenty millions are annually imported into England from these countries. The preparation of quills, or *touching* as it is called, is a curious and nice process. They are first moistened, not by immersion, but by dipping their ends into water and allowing the remaining parts to absorb moisture by capillary attraction. They are then heated in the fire or in a charcoal burner, and are passed quickly under an instrument with a fine edge, which flattens them in such a manner as to render them apparently useless. They are next scraped, and again exposed to the heat, when they are restored to their original form. After this preparation they are cut into pens by means of the pen-cutter's knife, and are also trimmed. A pen-cutter will make about 800 in a day. Metallic pens appear to have been first introduced as rewards for merit, but steel pens for writing were first made by Mr. Wise, in 1803, and were fashioned like pens made of quills. A patent was taken out in 1812, for pens with flat cheeks, and in this way all metallic pens were made for some time, as the rhodium pen of Dr. Wollaston, and the iridium pen of others. About the year 1824, Mr. Perry began to make pens, and six years after they were manufactured at Birmingham. The steel is pressed into thin sheets by a rolling press. It is then cut into slips, annealed for fourteen hours, and again passed under the roller. By means of a peculiar cutting-machine the pens are formed in a falchion shape. The preparation for forming the slit then takes place. An extremely fine-edged chisel is brought down upon each separately, and is allowed to penetrate two-thirds through its substance. The edge of this instrument is finer than any razor, but is much harder, as it does not require to receive an edge during the whole of the day. This superior quality is given to the steel by beating it for several hours with a hammer. It is an important fact, and appears to have been discovered by the pen-manufacturers. A triangular piece is next cut out at the upper end of the slit in the pen, which is called *piercing*. The next object is to give them their proper shape, which is effected by means of a punch fitting into a corresponding concavity. The pens are then heated red hot and dipped into oil, which must be at least three feet deep. The oil in a few weeks loses its properties and becomes charred. The next operation is polishing. This is effected in a peculiar apparatus, called, emphatically, the *devil*, consisting of a fly-wheel and box, in which the pens are placed, and to which a motion is given, resembling that required in shaking together materials in a bag. This motion is continued for eight hours, when the pens are found to be completely deprived, by the friction against each other, of any asperities which might have existed on their edges, and though not visible to the naked eye, would have obstructed the free motion of the pen in writing. After this they are tempered in a box, shaken and brought to a blue colour, being carefully watched, and the heat lessened whenever a shade of yellow is observed on their surface. The split is now completed by touching its side with a pair of pincers. The total quantity of steel employed in this country for making pens amounts to 120 tons, which is equivalent to about two hundred millions of pens. While we allow that much ingenuity has been shown in the construction of steel pens, and many improvements effected in their manufacture (for they were wretched things at first), we still think them, at best, but very indifferent substitutes for those made from the quills of geese.——*Fountain-pen*, is a pen made of silver, or other metal, so contrived as to contain a considerable quantity of ink, which, flowing out by gentle degrees, supplies the writer a long time without his being under the necessity of taking fresh ink.

A FORM OF A PEN, WRITTEN IN THE SEVENTH CENTURY AT ADHELM, THE FIRST KNOWN WORK IN LATIN, IS STILL IN EXISTENCE.

PE'NAL LAWS, laws made for the punishment of criminal offences.



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PEN'ALTY (in law), a fine or forfeiture by way of punishment, which is a *pecuniary* penalty; but the word *penalty* is not confined to this; for imprisonment, whipping, transportation, &c. are equally penalties, though in the shape of personal punishments.

PEN'ANCE, in ecclesiastical law, the infliction of some pain or bodily suffering, as fasting, flagellation, &c.; as an exercise of repentance for some sin, either voluntary or imposed.——*Penance* is one of the seven sacraments of the Romish church.

PENA'TES, in Roman antiquity, tutelar deities, either of countries or of particular houses, in which last sense they were the same with the *lares*. The Penates were originally the tutelar gods of the Trojans; but being adopted by the Romans, they were thus named.

PEN'CILS, or BLACK LEAD PENCILS, as they are usually called, are formed of carburet of iron or plumbago, with a point at one end, used for writing or drawing. Since the introduction of the "ever-pointed pencils," in their ingeniously constructed cases, it is said that the manufacture of pencils in cedar-wood has decreased to an almost incredible extent; but it is still by no means inconsiderable or unimportant.——*Pencil of rays*, in optics, a number of rays diverging from some luminous point, which, after falling upon and passing through a lens, converge again on entering the eye.——*Pencil*, a small brush used by painters for laying on their colours. Pencils are of various kinds, sizes, and materials; the larger sorts are made of swine's bristles, the thick ends of which are bound to a stick or handle, and when large are called brushes. The finer sorts are made of the hair of camels, badgers, and squirrels, and of the down of swans; these are tied at the upper end, and inclosed in a quill. All such, when good, on being drawn between the lips come to a fine point.

PEN'DANT, a long narrow flag or streamer, displayed from a ship's mast head, usually terminating in two points. It denotes that a ship is in actual service. The *broad pendant* is a flag that serves to distinguish the chief of a squadron.——The *rudder pendant* is a rope made fast to the rudder by a chain, to prevent the loss of the rudder when unshipped.——In heraldry, a part hanging from the label, resembling the drops in the Doric frieze.——Also, an ornament or jewel hanging at the ear.

PEN'DULUM, in dynamics, a ponderous body, so suspended that it may vibrate, or swing backward and forward, from some fixed point, or axis of suspension. The vibrations of a pendulum are called its oscillations, and depend on the force of gravity. From the precision of its motions, it is employed in measuring time and space. The distance of a ship, from which a gun is fired, may be ascertained by measuring the interval of time between the flash and the sound of a gun; and, upon the same principle, the distance of a cloud, by numbering the seconds or half seconds between the lightning and the thunder: thus, supposing that between the lightning and thunder ten seconds are counted, it follows (sound passing through 1142 feet in a second) that the distance of the cloud is 11,420 feet. Height also, as the height of a room, may be measured by a pendulum vibrating from its top; and by the same instrument, the force of gravity on the various parts of the earth's surface is discovered. The origin of the pendulum is traced to Galileo's observation of a hanging lamp in a church at Pisa continuing to vibrate long and with singular uniformity, after any accidental cause of disturbance. Hence he was led to investigate the laws of the phenomenon, which led to results in the highest degree important. A common clock, as Dr. Arnott observes, is merely a pendulum, with wheel-work attached to it, to record the number of the vibrations; and with a weight or spring, having force enough to counteract the retarding effects of friction and the resistance of the air. The wheels show how many swings or beats of the pendulum have taken place, because at every beat, a tooth of the last wheel is allowed to pass. Now, if this wheel has sixty teeth, as is common, it will just turn round once for sixty beats of the pendulum, or seconds; and a hand fixed on its axis, projecting through the dial-plate, will be the second hand of the clock. The other wheels are so connected with this first, and the numbers of the teeth on them so proportioned, that one turns sixty times slower than the first, to fit its axis to carry a minute hand; and another, by moving twelve times slower still, is fitted to carry an hour-hand.

PENETRA'LE, was a sacred room or chapel in private houses, set apart for the worship of the household gods among the Romans. In temples also there were *penetralia*, or apartments of particular sanctity, where the images of the gods were kept, and certain solemn ceremonies performed.

PEN'GUIN, in ornithology, a genus of fowls of the order of *Palmipedes*. The penguin is found only in southern latitudes, and has very remarkable peculiarites. It is an aquatic fowl, with very short legs, with four toes, three of which are webbed; the body is clothed with short feathers, set as compactly as the scales of a fish; the wings are small, like fins, and covered with short scale-like feathers, so that they are useless in flight. When on land, penguins stand erect; they are tame, and may be driven like a flock of sheep; but they seldom go on shore, except in the breeding season, when they burrow in the earth. In water they swim with rapidity, their finlike wings greatly assisting them.

PENIN'SULA, a part of a continent almost surrounded by the sea, except where it joins the main land by a narrow neck called an *isthmus*. In Europe it is common to designate Spain and Portugal by the appellation of *the peninsula*; and when we speak of the contest maintained by the British and native troops against the French, we accordingly term it the *peninsular war*.



A PENDULUM, ONCE PUT IN MOTION, WOULD NEVER CEASE TO OSCILLATE IN ARCS, WERE IT NOT FOR FRICTION AND THE RESISTANCE OF THE AIR.

THE NEW PENITENTIARY FOR THE RECEPTION OF CONVICTS AT MILBANK, WESTMINSTER, WAS COMPLETED, AND CONVICTS REMOVED TO IT, JUNE, 1816.

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PENNY-PIECES AND TWO-PENNY PIECES OF COPPER, FIRST COINED IN ENGLAND, 1797. A NEW DIE OF A REDUCED SIZE CUT FOR THEM, 1806.

PENITEN'TIARY, in the ancient Christian church, a name given to certain presbyters, appointed in every church to receive the private confessions of the people, in order to facilitate public discipline, by acquainting them what sins were to be expiated by public penance, and to appoint private penance for such crimes as it might be deemed unadvisable to censure publicly. ——*Penitentiary*, at the court of Rome, an office in which are examined and delivered out the secret bulls, graces, or dispensations relating to cases of conscience, confessions, &c.——The title of *penitentiary* was also given to an officer in some cathedrals, who was vested with power from the bishop to absolve in cases reserved to him. ——*Penitentiary*, the name of some prisons in England where felons are kept to hard labour.

PEN'ITENTS, an appellation given to certain fraternities in Catholic countries, distinguished by their different habits, and generally employed in charitable acts.

PEN'NON, in heraldry, a small pointed flag, borne by a gentleman. When knighthood was conferred upon him, the point was cut off, and the square flag that remained bore the name of *banner*.

PEN'NY, an ancient silver coin, which was the only coin current among our Saxon ancestors; but now a copper coin, twelve of which are equal to a shilling. In Etheldred's time the penny was the 20th part of an ounce troy, hence the denomination *pennyweight*. Till the time of Edward I. the penny was struck with a cross so deeply sunk into it that it might, if required, be easily broken, and parted into halves and quarters; hence the terms *half-pence*, and *farthings* or *quadrantes*.

PEN'NYWEIGHT, a Troy-weight, containing 24 grains, each of which is equal in weight to a grain of wheat gathered out of the middle of the ear, and well dried.

PEN'SION, an annual allowance of a sum of money to a person by government, in consideration of past services, civil or military; or, at least, such a pension ought to be.

PEN'SIONER, one who receives an annuity from another, whether in consideration of service past or present, or merely as a benevolence.——In the universities of Cambridge and Dublin it denotes an undergraduate or bachelor of arts who lives at his own expense.——*The Band of Gentlemen Pensioners*, who attend on the British sovereign, was instituted by Henry VII., and their duty is to guard the royal person when at home; for which each receives a pension or annual allowance of 100*l*.—— *Pensions of the Inns of Court*, annual payments made by each member to the society.

PENTACAP'SULAR, in botany, an epithet for a plant having five capsules or seed-vessels.

PEN'TACHORD, a musical instrument with five strings.

PENTACH'RINITE, the fossil remains of a zoophite.

PENTACHROS'TIC, a set of verses so disposed as to have five acrostics of the same name in five divisions of each verse.

PENTACOCCOUS, in botany, an epithet implying that the plant has five united cells with one seed in each.

PEN'TAGON, in geometry, a figure having five sides and five angles. If the five sides are equal, the angles are so too, and the figure is called a regular pentagon —— In fortification, a fort with five bastions.

PENTAGRAPH, an instrument for drawing figures in any proportion at pleasure, or for copying or reducing a figure, plan, print, &c. to any desired size.

PENTAGYN'IA, in botany, an order of plants in the Linnæan system, comprehending such as have five pistils in an hermaphrodite flower.

PENTAHE'DRON, in geometry, a figure having five equal sides.

PENTAHEXAHE'DRAL, in crystalography, exhibiting five ranges of faces one above another, each range containing six faces.

PENTAM'ETER, in Latin and Greek poetry, a verse consisting of five feet or metres. The two first may be either dactyls or spondees; the third is always a spondee, and the two last anapests. A pentameter verse subjoined to an hexameter constitutes what is called *elegiac*.

PENTAN'DRIA, in botany, the fifth class of the Linnæan system, containing those plants which have hermaphrodite flowers with five stamens, viz. the orders, *monogynia, digynia, trigynia, tetragynia, pentagynia, decagynia*, and *polygynia*.

PENTAN'GULAR, in geometry, having five corners or angles.

PENTAPETA'LOUS, an epithet given to flowers that consist of five petals or flower-leaves.

PENTAPH'YLLOUS, in botany, consisting of, or having five leaves.

PEN'TARCHY, a government in the hands of five persons.

PENTASTICH, in poetry, a composition consisting of five verses.

PEN'TASTYLE, in architecture, a building in which there are five rows of columns.

PENTATEUCH, an appellation given to the first five books of the Old Testament, viz. Genesis, Exodus, Levitieus, Numbers, and Deuteronomy.

PENTATH'LUM, or PENTATH'LON, in antiquity, a general name for the five exercises performed at the Grecian games, namely, wrestling, boxing, leaping, running, and playing at the discus.

PENTECON'TER, in antiquity, a Grecian vessel of fifty oars; smaller than a trireme.

PEN'TECOST, a solemn festival of the Jews, instituted in memory of the promulgation of the law, and so named because that event took place on the fiftieth day after their departure from Egypt. It is retained in the Christian church (and by us called Whitsuntide) on account of the miraculous descent of the Holy Ghost on the apostle, which happened on one of the annual returns of its celebration.

PENNY, IN ANCIENT STATUTES, IS USED FOR ALL SILVER MONEY: HENCE THE WARD-PENNY, HUNDRED-PENNY, TITHING-PENNY, AND AVER-PENNY.



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PENULTIMA, PENULT, or PENULTIMATE SYLLABLE, in grammar, the last syllable but one of a word; and hence the *anti-penultimate* syllable is the last but two, or that immediately before the penultima.

PENUM'BRA, in astronomy, a partial shade or obscurity observed between the perfect shadow, where the light is entirely intercepted, and the full light in an eclipse, arising from the magnitude of the sun. Penumbræ must be constant attendants of all eclipses, whether of the sun or moon, or planets primary or secondary.

PEP'PER, a plant and its seed, of the genus *Piper*. The leaves of the pepper tree are oval, the flower white, and the fruit is an aromatic, dry, and hot berry. We have three kinds of pepper; the white, the black, and the long. Black pepper *(piper nigrum)* is the fruit of a shrub of the creeping kind, growing in Java, Sumatra, Ceylon, and other Asiatic countries. The berries are produced in clusters, and change as they ripen from green to red, and afterwards to black. White pepper differs from the black only in being stripped of its corticle or covering. To strip them, the black berries are steeped in salt water, and after they have been exposed to the sun for several days the chaff is rubbed off with the hands. In this operation the pepper loses much of its original warmth.—The long pepper is a fruit of a different species, also from the East Indies, and consists of numerous grains attached to a common footstalk.

PEP'PERMINT, in botany, a plant of the genus *Mentha*. It is highly aromatic and pungent. Also, a liquor distilled from the plant.

PEP'PERMINT TREE, in botany, the *Eucalyptus piperita*, a native of New South Wales.

PEP'PER-WATER, a liquor prepared from powdered black pepper; used in microscopical observations.

PER, a Latin preposition, signifying *by*, used in many phrases, as *per force*, or *per annum*, *per cent. &c.*——In chemistry, it is used as a prefix to denote *very* or *fully*, to the utmost extent, as in *peroxyde*, a substance oxydated to the utmost degree.

PERAM'BULATOR, an instrument for measuring distances, otherwise called a *pedometer*, or *surveying wheel*. The proper office of this instrument is that of measuring roads and large distances, where expedition and moderate accuracy are required.

PERBISUL'PHATE, in chemistry, a sulphate with two proportions of sulphuric acid, and combined with an oxyde at the maximum of oxydation.

PER CENTUM, or PER CENT., the rate of interest, or so much for each hundred; as, *five per cent.*, that is, five pounds for every hundred pounds.

PERCEP'TION, in logic, the first act of the mind, which consists in the reception of ideas through the medium of the senses. It has been well observed that the first objects which strike our senses give us our first ideas; and our wants are the cause of our *attention:* the repetition of these ideas, and the development of new wants, give birth to our sentiments and thoughts. The eyes convey the ideas of colour, the ears those of sounds, the nostrils those of odours, and the palate those of savours: these ideas have no connection with each other; they are separate ideas of different qualities of bodies; but the sense of *touching* unites the whole in *one* object, to which may happen to be at the same time coloured, odorous, savoury, and sonorous.

PERCH, in ichthyology, a fish of the genus *Perca*, with rough scales and sharp incurvate teeth: its flesh is very delicate.——*Perch*, in commerce, a measure of five yards and a half, or sixteen feet and a half. The word *rod* is much more generally used than either *pole* or *perch*, though they all signify the same.

PERCHLO'RIC ACID, in chemistry, chlorine converted into an acid by combining with a maximum of oxygen. A compound of this acid with a base is termed *perchlorate*.

PERCUS'SION, in mechanics, the impression a body makes in falling or striking upon another: or the shock of two bodies in motion.

PERCUS'SION LOCKS, a newly-invented lock for fire-arms, which, in the place of the pan, has a small tube projecting horizontally from the side of the gun. In this tube another small tube stands perpendicularly. The cock, instead of being formed to hold a flint, is shaped somewhat like a hammer, with a hollow to fit upon the tube last mentioned. On this tube a little cap of copper is placed, in the bottom of which is a chemical mixture that kindles by percussion.

PERDU', in military affairs, a term applied to any soldier who is in a dangerous post; whence *enfans perdus*, in the plural, for the forlorn hope of an army.

PERE LA CHAISE, the name of the celebrated cemetery at Paris, laid out as such in 1804. It was formerly the chief seat of the Jesuits' establishment in France, and was presided over by Père la Chaise, confessor of Louis XIV. [See CEMETERY.]

PEREN'NIAL, in botany, a plant which lives or continues more than two years whether it retains its leaves or not.

PERFECTION. In the highest sense to which this word can be applied, it means an inherent or essential attribute of supreme or infinite excellence. If we speak of *physical perfection*, we mean that a natural object has all its powers, faculties, or qualities entire and in full vigour, and all its parts in due proportion. *Moral perfection* is the complete possession of such moral qualities and virtues as the thing spoken of is capable of possessing.

PERFO'LIATE, in botany, an epithet for a leaf the base of which entirely surrounds the stem transversely, so that the stem seems to have been driven through the middle of the leaf.

PERFORATÆ, in botany, the name of the 60th order of plants in Linnæus's Frag-



THE CHEMICAL POWDER USED WITH PERCUSSION LOCKS EXPLODES THE POWDER IN THE GUN MORE FORCIBLY THAN COMMON POWDER.

THE POWDER USED WITH PERCUSSION LOCKS IS VARIOUSLY MADE, OF MERCURY, PURIFIED NITRIC ACID, AND SPIRIT OF WINE.

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THE FIRST JOURNAL OF THE CHARACTER OF A REVIEW WAS THE FRENCH "JOURNAL DES SAVANTS," ESTABLISHED IN 1665.

WITHOUT AN ACQUAINTANCE WITH THE PERIODICAL LITERATURE OF A COUNTRY, A KNOWLEDGE OF THE STATE OF SOCIETY IS LOST.

ments of a Natural Method; so called because these plants have their leaves perforated with small holes.

PE'RI. In Persian mythology, the *peris* are the descendants of fallen spirits, excluded from paradise until their penance is accomplished.

PERIANTH, in botany, the calyx or cup of a flower when it is contiguous to the other parts of fructification, in distinction from the calyx or outer covering of the flower.

PERICAR'DIUM, in anatomy, a double membrane which surrounds the whole compass of the heart. It contains a liquor which prevents the surface of the heart from becoming dry by its continual motion.

PERICARP, the fruit, or seed-vessel of plants, in all their forms and delicious varieties, serving as food for animals, and destined for that purpose.

PERICRA'NIUM, in anatomy, the membrane that closely invests the skull.

PERIGEE, or PERIGÆ'UM, in astronomy, that point in the orbit of the sun or moon in which it is at the least distance from the earth: opposed to *apogee*.

PERIGORD-STONE, in mineralogy, a sort of manganese found at Perigord in France.

PERI'GYNOUS, in botany, an epithet for a flower or plant which has the corolla or stamens inserted around the pistil.

PERIHE'LION, in astronomy, that point of a planet's orbit in which it is nearest to the sun; opposed to *aphelion*.

PERIHEXAHE'DRAL, in crystalography, a term designating a crystal whose primitive form is a four-sided prism, and in the secondary form is converted into a prism of six sides.

PERIM'ETER, in geometry, the ambit or extent which bounds a figure or body, whether rectilinear or mixed. In circular figures, instead of *perimeter* we use the word *circumference*, or *periphery*.

PERIOCTAHE'DRAL, in crystalography, a term designating a crystal whose primitive form is a four-sided prism, and in its secondary form is converted into a prism of eight sides.

PERIOD, in astronomy, the time which is taken up by a planet in making its revolution round the sun, or the duration of its course till it returns to the point of its orbit where it began.——In chronology, the revolution of a certain number of years, as the Julian period.——In Grammar, a full stop at the end of any sentence.——In arithmetic, a point or comma after every third place in a series of figures; also in the extraction of roots to point off the figures into given numbers or parcels.——*Period* also means an indefinite portion of any continued state, existence, or series of events; as, the first *period* of life, the earliest *periods* of history, &c.——*Period of a disease*, in medicine, is the time between the access of one fit, or paroxysm, and that of the next, including the entire exacerbation, decline, intermission, and remission. In physiology, *periods* designate the various stages in the development and decay of the animal organization, which are distinguished by a marked character, as the period of childhood, of puberty, &c.

PERIODICALS, in literature, comprise the whole of those publications which appear at regular intervals, whether devoted to general information, or especially intended for some particular class of readers. They consequently include all the newspapers, reviews, and magazines, as well as such works on science and art as are published in a series of volumes, parts, or numbers; and, most assuredly, while they have contributed greatly to the diffusion of general knowledge, they have done much towards promoting the cause of truth, and facilitating the progress of science. [See NEWSPAPERS.]

PERIŒ'CI, in geography, such inhabitants of the earth as have the same latitudes, but who live in opposite longitudes; or live under the same parallel and the same meridian, but in different semicircles of that meridian. They have the same seasons throughout the year, but when it is noon-day with one, it is midnight with the other.

PERIOS'TEUM, in anatomy, a nervous, vascular membrane, endued with quick sensibility, immediately surrounding both the internal and external surfaces of the bones: it is hence divided into the *external* and *internal periosteum*; and where it externally surrounds the bones of the skull, it is usually called the *pericranium*. The seeming sensibility of the bones is that of this membrane; and its use appears to be to distribute the vessels on the external surfaces of bones.

PERIPATETICS, the followers of Aristotle, whose doctrines are distinguished by the name of the *Peripatetic Philosophy*. He also was called the Peripatetic because he delivered his lectures *walking* in the Lyceum at Athens.

PERIPH'ERY, the circumference of a circle, ellipsis, or other regular curvilinear figure.

PERIPH'RASIS, or PER'IPHRASE, in rhetoric, circumlocution; or the use of more words than are necessary to express an idea.

PERIPNEU'MONY, or PN'EUMO'NIA, in medicine, an inflammation of the lungs, attended with acute fever, purulent expectoration, and difficult respiration.

PERIP'TEROUS, in architecture, an epithet for a place encompassed about with columns.

PERIS'CII, or PERIS'CIANS, in geography, the inhabitants of either frigid zone, between the polar circles and the poles; where the sun, when in the summer signs, moves only round about them, without setting, and consequently their shadows in the course of the day turn to every point of the compass.

PER'ISPERM, in botany, a thick, farinaceous, fleshy, or horny part of the seeds of plants, either entirely or only partially surrounding the embryo, and enclosed within the investing membrane.



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BY THE LAW OF MOSES (DEUT. XIX. 19), IF A MAN TESTIFY FALSELY AGAINST HIS BROTHER, HE SHALL RECEIVE THE INTENDED PUNISHMENT.

BY THE PRUSSIAN CODE, WHOEVER PERJURES HIMSELF IS TO BE EXCLUDED FOR EVER FROM HIS EMPLOYMENTS, RIGHTS, AND CIVIL PROFESSION.

**PERISPHAL'SIS**, in medicine, the circumrotation of a luxated bone for the purpose of its restitution.

**PERISTAL'TIC MOTION**, in medicine, a spiral or vermicular spontaneous motion of the intestines, performed by the contraction of the circular and longitudinal fibres composing the fleshy coats of the intestines, by which the chyle is driven into the orifices of the lacteal veins, and the excrements are protruded.

**PERI'STYLE**, in architecture, a circular range of columns, or a building surrounded by a row of pillars.

**PERISYSTOLE**, in medicine, the pause or interval between the systole or contraction, and the diastole or dilatation of the heart.

**PERITONÆ'UM**, in anatomy, a thin, smooth, lubricous membrane investing the whole internal surface of the abdomen, and containing, more or less completely, all the viscera contained in it.

**PER'JURY**, in law, is the crime of wilful false swearing in any judicial proceeding, when lawfully required to depose the truth. The common law takes no notice of any false swearing, but such as is committed in some court of justice having power to administer the oath, or before some officer or magistrate invested with similar authority, in some proceeding relative to a civil suit or criminal prosecution; for the law esteems all other oaths unnecessary, at least, and hence will not punish the breach of them. By numerous statutes in England, the penalties of perjury have been extended to false oaths by electors, bankrupts, insolvent debtors, &c. *Subornation of perjury* is the offence of procuring a man to commit perjury. At the common law, perjury, and the subornation of it are punishable by fine, imprisonment, pillory, transportation, &c. —We are told that the Greeks imagined no person could swear falsely by Styx, without some remarkable punishment; and that no person guilty of perjury could enter the cave of Palæmon at Corinth, without being made a memorable example of divine justice: yet notwithstanding the general abhorrence in which perjury was held, and the credit which was given to such accounts of divine infliction, it was so much practised by the Greeks, that *Græca fides* became a proverb.

**PERMIT**, a note given by the officers of the excise for conveying spirits, wine, tea, coffee, &c., from one place to another.

**PERORA'TION**, the concluding part of an oration, in which the speaker recapitulates the principal points of his discourse or argument, and urges them with greater earnestness and force, with a view to make a deep impression on his audience. The main excellence of a peroration consists in vehemence, pathos, and brevity.

**PEROX'YDE**, in chemistry, a substance containing an unusual quantity of oxygen. —To *peroxydise* is to oxydise to the greatest degree.

**PERPENDICU'LAR**, hanging or extending in a right line from any point towards the centre of the earth or of gravity, or at right angles with the plane of the horizon. ——A *perpendicular* (in gunnery), is a small instrument used for the finding the centre line of a piece in the operation of pointing it at any object.

**PERPET'UAL MOTION**. The problem of a perpetual motion consists in the inventing of a machine which has the principle of its motion within itself; and the means proposed to solve this problem have been as various and opposite as its solution appears to be improbable. The difficulty is, that the resistance of the air, the friction of the parts of the machine, &c., necessarily retard, and finally stop, the motion of the machines, and therefore seem to render perpetual motion an impossibility. [See MOTION.]

**PERPHOSPHATE**, in chemistry, a phosphate in which the phosphoric acid is combined with an oxyde at the highest degree of oxydation.

**PERQUADRISUL'PHATE**, in chemistry, a sulphate with four proportions of sulphuric acid combined with a maximum of oxyde.

**PERROQUET** or **PARROQUET**, in ornithology, a small kind of parrot. Also, the *Alca Psittacula*, an aquatic fowl inhabiting the isles of Japan and the western shores of America.

**PER'RY**, the juice of pears, clarified by fermentation, in a manner similar to which apples are prepared in the process of making cider.

**PERSECU'TION**, the infliction of pain, punishment, or death upon others unjustly, more especially for adhering to a religious creed or mode of worship. The history of the world is full of persecutions; and there is scarcely any dominant sect or party religious or political, which has not at times disgraced humanity by inflicting unjust punishment or penalties upon their fellow-men, for adhering to principles which their consciences dictated and their judgment approved.

**PERSISTENT**, in botany, continuing without withering; as a *persistent calyx*, continuing after the corolla is withered; or a *persistent leaf*, remaining on the plant till the fruit is ripe, or till after the summer is over.

**PER'SON**, in its general sense, is a human being; a man, woman, or child.—— *Person*, in grammar, a term applied to such nouns or pronouns, as being either prefixed or understood, are the nominatives in all inflections of a verb. I, thou or you, he, she or it, are called the first, second, and third *persons*. Hence we apply the word *person* to the termination or modified form of the verb used in connection with the persons; as, the first *person* of the verb; or the verb is in the second *person*.

**PER'SONAL**, in law, belonging to the person and not to the thing; as *personal goods*, opposed to *real* property or estates: *personal action*, an action against the person, wherein a man claims satisfaction in damages for an injury to his person or property.——*Personal identity*, in metaphysics, sameness of being, of which conscious-



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A LANDSCAPE IN PERSPECTIVE SHOULD NOT INCLUDE MORE THAN SIXTY DEGREES, OR ONE-SIXTH OF THE HORIZON.

ness is the evidence.——*Personal verb*, in grammar, a verb that has inflections or endings to express the persons of the agent.

PERSONATÆ, in botany, the 40th Linnæan natural order of plants, characterized by being fetid, poisonous, and aromatic, with an irregular open petal.

PERSONIFICATION, the giving to an inanimate object the sentiments and language of a rational being; or the representation of an inanimate being with the affections and actions of a person. The more the imagination prevails among a people, the more common are personifications; and as reflection acquires the ascendancy, personifications are less used.

PERSPECTIVE, that branch of optics which teaches the art of representing objects on a plane surface, in the manner they appear under the peculiarities incident to distance and height. It is consequently a science of the first importance to the painter. In a practical sense, *perspective* is the art of drawing, according to the principles of geometry, the true representations of real objects; and is divided into *lineal perspective*, which relates to the position, form, magnitude, &c. of the several lines or contours of objects, and *aerial perspective*, which has principally a reference to the colouring and shading of distant objects. Suppose we view a point situated beyond an upright transparent plane, as a glass window, the spot where a straight line from the eye to this point will go through the window is the *perspective representation* of it: for the eye views all objects by means of rays of light, which proceed from it, to the different points of the object, in straight lines. Let us then imagine a spectator to be looking at a prospect without doors, from within, through a glass window; he will perceive not only the vast extent which so small an aperture will admit to be seen by his eye, but also the shape, size, and situation of every object upon the glass. If the objects are near the window, the spaces which they take upon the glass will be proportionably larger than when they are at a greater distance; if they are parallel to the window, then their shapes upon the glass will be parallel also; but if they are oblique, then their shapes will be oblique, and so on. And he will always perceive, that as he alters the situation of his eye, the situation of the objects upon the window will be altered also: if he raises his eye, the objects will seem to keep pace with it, and rise higher upon the window; and the contrary, if he lowers it. And so in every situation of the eye, the objects upon the window will seem to rise higher or lower; and consequently the depth of the whole prospect will be proportionably greater or less, as the eye is elevated or depressed; and the horizon will, in every situation of the eye, be upon a level with it: that is, the imaginary line which parts the earth and sky will seem to be raised as far above the ground upon which the spectator stands as his eye is. Now suppose the person at the window, keeping his head steady, draws the figure of an object seen through it upon the glass with a pencil, as if the point of the pencil touched the object; he would then have a true representation of the object in perspective, as it appears to his eye: for as vision is occasioned by pencils of rays coming in straight lines to the eye from every point of the visible object, it is plain that, by joining the points in the transparent plane through which all those pencils of rays respectively pass, an exact representation must be formed of the object, as it appears to the eye in that particular position, and at that determined distance. And were pictures of things to be always first drawn on transparent planes, this simple operation, with the principle on which it is founded, would comprise the whole theory and practice of perspective. But what is called the *art of perspective*, according to certain rules deduced from optics and geometry, constitutes a study too intricate for its thorough development in a work of this kind, and forms a branch of study which can only be obtained *secundum artem*.——*Aerial perspective* teaches how to judge of the degree of light which objects reflect in proportion to their distance, and of the gradation of their tints in proportion to the intervening air. It is only the nearest objects which appear in their true colours and full light. In the case of the more distant, the light and colour become blended with the colours of the vapours which fill the air, in proportion to their distance, until at last the objects become lost in an indistinct mass, of a blueish tinge, in the horizon. A painter, therefore, who would succeed in aërial perspective, ought carefully to study the effects which distance in its different degrees, or accidental colours of light, have on each particular colour; and in order to give any colour its proper effect in proportion to its distance, it ought to be known what the appearance of that colour would be were it close to the eye, regard being had to that degree of light which is chosen as the principal light of the picture: for if any colour is made too bright for another, or for the general colouring of the picture, the brightness of that colour, to use a technical phrase, will kill the rest. In short, the harmony of a picture, and that captivating charm which we find more particularly in good landscape painting, depend greatly upon a correct application of aërial perspective.

PERSPIRATION, in medicine, that vaporous evacuation of the juices of the body through the pores of the skin, which equalizes the heat in animals. It is distinguished into *sensible* and *insensible* perspiration; the former of which is visible in the form of very little drops adhering to the epidermis, and the latter is so subtile a vapour that we cannot see it with the naked eye. The uses of the insensible perspiration are, 1. to liberate the blood from superfluous animal gas, azote, and water; 2. to eliminate the noxious and heterogeneous excrements; hence the acid, rancid, leguminous, or putrid perspiration

WOOLLEN CLOTH PRESERVES WARMTH TO THE SKIN UNDER ALL CIRCUMSTANCES, AND ALLOWS THE PERSPIRATION TO ESCAPE THROUGH ITS TEXTURE.



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of some men; 3. to moisten the external surface of the body, lest the epidermis and its nervous papillæ be dried up by the atmospheric air; and 4. to counterbalance the suppressed pulmonary transpiration of the lungs. Perspiration is accordingly essential to health, and when deficient may be promoted by exercise, the warm bath, or friction. At ordinary times, it should never fail of encouragement from washing the hands, feet, &c.

PERSUL'PHATE, in chemistry, a combination of sulphuric acid with the peroxyde of iron.

PERTU'SED, in botany, full of hollow dots on the surface, as a leaf.

PERU'VIAN BARK. [See BARK.]

PESA'DE, in horsemanship, the motion of a horse when he raises his fore quarters, keeping his hind feet on the ground without advancing.

PES'TILENCE, any contagious or infectious disease that is epidemic and mortal.——It is also used to denote any moral disease or corruption destructive of happiness

PET'AL, in botany, a flower-leaf. In flowers of several petals, the corolla is the whole, and a petal is one of the leaves of which the whole corolla is composed.——*Petaloid*, having the form of petals.

PET'ALISM, in antiquity, a form of proscription or banishment practised at Syracuse, by writing the person's name on a leaf; whence the name. It differed from the Athenian *ostracism* merely in being for five years instead of ten, and the name being written on leaves instead of shells or tiles.

PET'ALITE, a rare mineral occurring in masses, having a foliated structure; its colour milk white, or shaded with gray, red, or green.

PETARD', in fortification, a hollow engine shaped like a sugar-loaf, to be loaded with powder and fixed on a plank; made for breaking open gates, drawbridges, &c.

PET'ASUS, in antiquity, a covering for the head, similar to a broad brimmed hat, used to keep off the heat of the sun.——In architecture, the cupola of a house, in the form of a petasus.

PETAURIS'TÆ, in antiquity, a name given to certain athletæ, who threw themselves from a machine called a *petaurum*, which was hung high in the air, and descended to the earth by means of a rope.

PETE'CHIÆ, purple spots which appear on the skin in maligunant fevers. Hence the term *petechial* fever.

PETIOLE, in botany, the leaf-stalk, or the stem which supports the leaf. Hence the epithet *petiolate* for a leaf growing on a petiole.

PETIT, or PETTY. The former word occurs in our law books in such phrases as *petit jury, petit treason, petit larceny*, &c.; but as the practice is giving way to the use of the English *petty*, and as there is no reason why the language should be disfigured with barbarisms or jargon of any kind, we trust that these and other similar hybrid compounds will ere long be altogether abolished.——*Petit treason*, the crime of killing a person to whom the offender owes duty or subjection. Thus the crime of murder, when a wife kills her husband, or a servant his master, has this appellation.——*Petit larceny*, the stealing of goods of the value of twelve pence, or under that amount.——*Petit constable*, an inferior civil officer subordinate to the high constable.——*Petit jury*, a jury of twelve freeholders who are empanelled to try causes in a court; so called in distinction from the grand jury, which tries the truth of indictments. (See JURY.)

PETI'TION, a formal supplication or request made by an inferior to a superior, especially to one having some jurisdiction. Also, a paper containing a supplication or solicitation; as private or public *petitions* to parliament.

PETI'TIO PRINCIPII, in logic, the taking a thing for true, and drawing conclusions from it as such; when it is either false, or at least requires to be proved before any inferences can be deduced from it. In common parlance this is called "begging the question."

PETONG', the Chinese name of a species of copper of a white colour. It differs from *tutenag*, though it is sometimes confounded with it.

PETREL, in ornithology, the *Procellaria* of Linnæus, a genus of birds well known to seamen by the name of "Mother Carey's chickens," whose appearance is dreaded by them as a sure prognostic of a storm. They breed in rocks adjoining the sea, forming their nests in cavities. They seem to repose in a common breeze; but upon the approach, or during the continuation, of a gale, they surround a ship, and catch up the small animals which the agitated ocean brings near the surface, or any food that may be dropped from the vessel. Whisking like an arrow through the deep valleys of the abyss, and darting away over the foaming crest of some mountain wave, they attend the labouring bark in all her perilous course. When the storm subsides, they retire to rest, and are no more seen. The inhabitants of the Faroe islands use them as lamps: they pass a wick through their bodies, which, when lighted, burns a long time, from the quantity of fat they contain.

PETRIFACTION, in natural history, the conversion of wood, bones, and other substances into stone. Petrified bodies are more or less altered from their original state, according to the different substances among which they have lain in the earth. Some are found but very slightly changed, while others are so highly impregnated with crystaline, sparry, pyritical, or other extraneous matter, as to appear mere masses of stone; but they are generally of the external dimensions, and retain more or less of the internal figure of the bodies into the pores of which this matter has made its way. The animal substances thus found petrified are sea-shells, the teeth, bony pa-



"PETALISM" WAS INTRODUCED IN SYRACUSE TO PREVENT THE TYRANNY OF THE RICHER CITIZENS, WHO OPEN AIMED AT THE DIADEM.

EVERY KIND OF WATER CARRIES IN IT SOME EARTHY PARTICLES, WHICH BECOME ATOMS OF A GREATER OR LESS DEGREE OF HARDNESS.

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lates and bones of fish, the bones of land animals, &c. These are found variously altered by the insinuation of stony and mineral matter into their pores; and the substance of some of them is wholly gone, there being only stony, sparry, or other mineral matter remaining in the shape and form. [See ORGANIC REMAINS.]

PETRO'LEUM, or ROCK OIL, in mineralogy, an extremely subtile and penetrating fluid exuding from the earth, or from cavities in rocks, being the thinnest of all the native bitumens. It is very light and pellucid; but though equally bright and clear under all circumstances, it is liable to a very great variety as to its colour. The substances which mineralogists have distinguished by the names asphaltum, maltha, petroleum, and naptha, are thought by some naturalists to be mere varieties of one species, and form a series which passes into coal. They may be thus distinguished. *Asphaltum* forms the connection with pitch coal; and is found in veins, and in small masses, and also sometimes on the surface of lakes. *Maltha* is softer, has a degree of tenacity, and a strong bituminous smell. *Petroleum* is semi-liquid, semi-transparent, of a reddish-brown colour, and fetid odour. *Naptha* is of a lighter colour, more or less transparent, perfectly liquid, light, odoriferous, volatile, and inflammable.

PETROMY'ZON, in ichthyology, the lamprey, a genus of fishes whose form and motion resemble those of the eel, and of which there are nine species. The *Petromyzon marinus*, or great lamprey, is usually of a brown olive colour tinged with yellowish white. It frequently grows to the length of three feet, is an inhabitant of the seas, but ascends the rivers early in the spring, in which it resides a few months, and then returns to the ocean. It is viviparous, and supposed to subsist almost entirely on worms and fishes. Fishes of this genus fasten themselves with the jagged edges of the mouth to large stones with the most extraordinary firmness. They have a wonderful tenacity to life, and various parts of the body long continue to move after it is separated from the head; and the head itself will adhere to a rock for hours after the greater part of the body is cut away. The *Petromyzon fluviatilis*, or little lamprey, is very abundant in the Thames.

PETROSI'LEX, in mineralogy, a genus of earths of the siliceous order; consisting for the most part of silica, with a portion of alumina and carbonate of lime. It is found in primitive rocks and stratified mountains, has no lustre, and melts before the blow-pipe.

PETRO'SUM OS, in anatomy, the inner process of the bones of the temples; so named on account of its hardness and craggedness.

PETUNSE, or PETUNTSE, in mineralogy, a sort of porcelain clay used by the Chinese in the manufacture of porcelain or china-ware. It is a variety of feldspar.

PEWTER, a composition of factitious metal, consisting of tin and lead, or of tin alloyed with such proportions of lead, zinc, bismuth, antimony, or copper, as the experience of the workman has shown to be most conducive to the improvement of its hardness and colour. The kind of pewter of which tea-pots are made (called Britannia metal) is said to be an alloy of equal parts of brass, tin, antimony, and bismuth; but it is believed that the tin greatly preponderates. The pewterer fashions almost all his articles by casting them in moulds of brass or bronze, which are made in various pieces nicely fitted and locked together.

PHAGEDEN'IC, a medicine or application that eats away proud or fungous flesh. Any wound or ulcer that corrodes or eats away the flesh is also termed phagedenic ——*Phagedenic water*, a mixture of quick lime and corrosive sublimate.

PHALÆ'NA, in entomology, the moth, a genus of insects of the *lepidopterous* order, having the antennæ gradually tapering from the base to the tips, tongue spiral, and wings when at rest generally deflected.

PHAL'ANX, in the military affairs of Greece, a square and compact battalion or body of soldiers, formed in ranks and files compact and deep, with their shields joined and pikes crossing each other, so as to render it almost impossible to break it. At first the phalanx consisted of 4000 men, but was afterwards doubled and even quadrupled. The Macedonian phalanx is thus described by Polybius. It was a square of pikemen, consisting of sixteen in flank and five hundred in front; the soldiers stood so close together that the pikes of the fifth rank extended three feet beyond the front: the rest, whose pikes were not serviceable owing to their distance from the front, couched them upon the shoulders of those that stood before them, and so locking them together in file, pressed forward to support and push on the former rank, by which means the assault was rendered more violent and irresistible.——The word *phalanx* is likewise used for any combination of people distinguished for firmness or solidity of union.

PHAL'AROPE, in ornithology, the name of several species of water-fowls inhabiting the northern latitudes of Europe and America. They live on the sea coasts, fly well, and swim expertly, resisting the heaviest waves, but never dive. Their flesh is oily and unpalatable.

PHANTASMAGO'RIA, an optical exhibition very similar to the magic lantern. It takes its name from *phantasm*, an imaginary or airy appearance.

PHARISEES, a sect among the Jews, who distinguished themselves by their zeal for the traditions of the elders, which they derived from the same fountain with the written word itself, pretending that both were delivered to Moses on Mount Sinai, and were therefore both of equal authority. From their rigorous observance of these traditions they considered themselves as more holy than other Jews, and therefore separated themselves from them; and hence, from the Hebrew word *pharis*, which signi-



PETROLEUM BURNS IN THE WATER; AND WHEN MIXED WITH ANY LIQUOR SWIMS ON THE SURFACE OF IT, EVEN ON SPIRIT OF WINE.

THE PHARISEES BELIEVED THAT A RESURRECTION WAS THE PRIVILEGE OF THE CHILDREN OF ABRAHAM ALONE, WHO WOULD RISE ON MOUNT SION.

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fies to separate, they had the name of *pharisees* or *separatists*. The pharisees numbered in their ranks the most distinguished lawyers and statesmen in Judæa; and as persons of all conditions were admitted into their society, they gained a political influence which often decided the fate of the Jewish nation under the Maccabees, and brought into their hands the power which had been left to the great council by the Romans in the time of Christ. They believed in a resurrection from the dead, and the existence of angels; but, according to Josephus, their belief extended to no more than a Pythagorean resurrection, that is, of the soul only, by its transmigration into another body and being born anew with it. From this resurrection they excluded all who were notoriously wicked, being of opinion that the souls of such persons were doomed to a state of everlasting woe.

PHARMACEUTICS, pharmacy; or the science of preparing and exhibiting medicines.

PHAR'MACOLITE, in mineralogy, arseniate of lime, which is either milk white or inclining to a yellowish white, and occurs in small reniform, botryoidal and globular masses, with a silky lustre.

PHARMACOL'OGY, the science or knowledge of drugs, or the art of preparing medicines. He who writes on this science is called a *pharmacologist*, and he who sells the medicines so prepared, a *pharmacopolist*, or apothecary.

PHARMACOPŒ'IA, a dispensatory, or book of directions for the composition of medicines approved of by medical practitioners, or published by authority.

PHAR'MACY, in its most extensive sense, signifies the art of preserving, preparing, compounding and combining whatever substances may be necessary to use for medical purposes; and as these substances may be mineral, vegetable, or animal, to understand the theory of pharmacy requires a knowledge of chemistry, botany, zoology, and mineralogy, in order to determine their properties and the laws of their composition and decomposition. In a narrower sense, pharmacy is merely the art of compounding and mixing drugs according to the prescription of the physician.

PHA'ROS, a light-house, or lofty building near the sea, where a fire is kept burning during the night, to serve as a beacon to vessels. The Pharos of Alexandria, built in the reign of Pharos, was one of the most celebrated works of antiquity, and from this circumstance the name is supposed to have been given to edifices of a similar description. The tower of king Pharos stood at the mouth of the Nile; it consisted of several stories or galleries, surmounted with a lantern, and was seen for many leagues at sea, as well as all along the coast.

PHARYNGOT'OMY, in surgery, the operation of making an incision into the pharynx to remove a tumour or anything that obstructs the passage.

PHA'RYNX, in anatomy, the muscular bag at the back part of the mouth. It is shaped like a funnel, adheres to the fauces behind the larynx, and terminates in the œsophagus. Its use is to receive the masticated food, and to convey it into the œsophagus.

PHA'SES, in astronomy, the various appearances of the moon at different ages, being first a *crescent*, then a *semicircle*, then *gibbous*, and lastly *full*, when she returns by the same gradation to the state of a new moon.——The word *phases* is sometimes used metaphorically, to designate various stages and appearances of one great historical event; as, "the different *phases* which the French revolution assumed," &c.

PHASIA'NUS, in ornithology, a genus of birds of the order *Gallinæ*, including the different varieties of the pheasant species, and the domestic cock and hen.

PHASMA'TA, in physiology, certain appearances arising from the various tinctures of the clouds, by the rays of the heavenly luminaries, especially the sun and moon.

PHEAS'ANT, in ornithology, a beautiful bird of the genus *Phasianus*, of which there are several varieties, including among them the common domestic fowl. The true pheasant *(phasianus colchicus)*, the delight of the sportsman and the epicure, is distinguished by having a long tail, the feathers of which are of different lengths, and overlay each other. In their wild state, these birds feed, like the rest of the gallinaceous tribe, upon vegetable food. The female constructs her nest of leaves in some retired spot; and if any of her eggs are taken away, she continues, like the common hen, to lay an additional quantity. There are several varieties, produced by climate and domestication. The golden pheasant *(phasianus pictus)*, a native of China, is remarkable for the beauty of its plumage: the prevailing colours are red, yellow, and blue, and it is distinguished by a crest upon the head, which can be raised at pleasure. The iris, bill, and legs are yellow; the tail long and richly tinted, and from above it arise a number of long, straight feathers, of a varied hue of scarlet and yellow. Another fine species found in China is the silver pheasant *(phasianus nycthemerus)*: it is of a silvery white colour, with very delicate black lines on each feather, and black under the belly. But the most splendid bird of this genus is the argus pheasant *(phasianus argus)*. This species, which is of a large size, is found on the mountains in Sumatra and some other of the Indian isles. It is distinguished by its long tail, large wing feathers, and a profusion of ocellate spots, which give this bird an extraordinary and most beautiful appearance.

PHELLOPLASTICS, the art of representing works of architecture on a reduced scale in cork, which affords very fine models, and are cheaper than those in wood, stone, gypsum, &c.

PHEN'GITE, in mineralogy, a beautiful species of alabaster, superior in brightness to the generality of marble.

PHENOM'ENON, in physics, whatever





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is presented to the eye by observation or experiment, or whatever is discovered to exist; as, the *phenomena* of heavenly bodies or terrestial substances; the *phenomena* of heat, colour, vision, &c.

PHE'ON, in heraldry, a kind of dart with a barbed head. Its head is frequently borne in coat armours, and termed a *pheon's* head.

PHIDI'TIA, in antiquity, Lacedemonian festivals, remarkable for the frugality of the entertainment, and the charitable intention of the meeting. They were held in public places, and in the open air. Those who attended made contributions of flour, wine, cheese, and figs. Rich and poor assisted alike at this feast, and were upon the same footing; the design of the institution being, like that of the Roman Charistia, to reconcile differences, and to cultivate peace, friendship, and a good understanding among all the citizens, of every rank and degree.

PHILADELPH'US, in botany, a genus of plants, class 12 *Icosandria*, order 1 *Monogynia*. The species are deciduous shrubs of the Syringa tribe.

PHILANTHROPY, good-will and benevolence towards the whole of mankind. It differs from *friendship*, inasmuch as it has no limits to its sphere of action, whereas friendship may be confined to an individual; but a true *philanthropist* so loves his fellowmen that he is continually exerting himself for their welfare.

PHILIP'PIC, a word used to denote any discourse or declamation full of acrimonious invective. It is derived from an oration made by Demosthenes against Philip of Macedon, in which the orator inveighs against the indolence of the Athenians. The fourteen orations of Cicero against Mark Antony are also called *philippics*.

PHILOL'OGY, in its usual acceptation, is that branch of literature which comprehends a knowledge of the etymology or origin and combination of words, and whatever relates to the history, affinity, and present state of languages. In a wider sense it signifies an assemblage of sciences, consisting of grammar, rhetoric, poetry, antiquities, history, criticism, &c. usually understood by the French term *belles lettres*.

PHILLYR'EA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. The species consist of the mock privet, well known evergreen shrubs.

PHILOSO'PHY, the love or pursuit of knowledge or wisdom. In a general sense, the term philosophy includes observation and reflection on every subject; or an investigation of the causes of all phenomena, both of mind and of matter. The term *philosopher* originated with Pythagoras, who declined the title of *the Wise*, which had been given to his predecessors, and contented himself with the name of a "friend, or lover of wisdom." The true end of philosophy is to ascertain facts or truth, and the causes of things and their phenomena; to enlarge our views of God and his works, and to render our knowledge of both practically useful and subservient to human happiness. It may be divided into three parts, intellectual, moral, and physical. The intellectual part comprehends logic and metaphysics; the moral part contains the laws of nature and nations, ethics, and politics; the physical part comprises the doctrine of bodies, animate or inanimate. With how much propriety then do those who apply themselves to the study of nature call themselves philosophers (lovers of science), rather than assume any other name which would arrogantly imply the perfection of their knowledge. Philosophy, in general, was so imperfect in the earliest ages of antiquity, and even in the more polished times of Greece and Rome, that it appears, when looking down from the high pinnacle of modern improvements and of late discoveries, but little removed from solemn trifling and puerile affectation. Yet some of the ancients, it must be confessed, have come so near the truth in matters of high importance, that we are led to wonder how they failed of making the discovery. In ethics and in politics they have left behind them some excellent works; but the solution of the phenomena of nature was reserved for a Bacon and a Newton to effect. Their reasonings were hypothetical, for they never thought of arguing by induction—the only chain by which truth can be drawn from many of her deep recesses. [The reader will find, under their proper heads, the several parts of Philosophy, natural and experimental, separately noticed. On a subject so vast and comprehensive, it would be vain indeed for us to attempt a complete treatise, or to endeavour to write a continuous history; but we may, not inappropriately, introduce in this place a brief sketch of the leadiee systems which prevailed at different periods of antiquity, and conclude by a few observations on the progress of philosophy during more recent times.]——*Pythagorean philosophy*, the system taught by Pythagoras, who flourished 500 years before the Christian era. He described the Deity as one incorruptible, invisible being; and differed from some of the ancients, as Epicurus, in conceiving a connection between God and man: that is, in teaching the doctrine of a superintending providence. He asserted the immortality of the soul; but in a sense essentially peculiar, and which appears to have been adopted by Plato, as it is, in part, at this day by the Hindoos. In the cosmogony of Pythagoras, spirit, however diffused through all animals, was part of the Divinity himself, separated only by the gross forms of matter, and ready, whenever disengaged, to unite itself with the kindred essence of God: but God was only purity; and the mind recoiled from the idea of uniting with him a portion of spirit soiled with the corruption of a sinful life. The soul, therefore, once tainted, could never return to the Deity whence it emanated, till it had again recovered its innocence. After having animated a human body by which crimes had been committed, it was denied the great object of its desire, a union with



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its God, and forced to enter into other bodies, till at length it filled a righteous one. To this theory was added another, by means of which punishments, proportioned to its offences, were awarded: according to this, the soul of a negro-driver would pass into the body of an infant negro; and that which in one existence plied the whip, in the other would receive the lash: the soul of the wicked would occupy the body of some animal exposed to suffering; and that of a being of few foibles undergo a sentence proportionably mild.—Such is the doctrine of the metempsychosis or transmigration of souls, a leading feature in the Pythagorean system.——*Socratic philosophy*, or the doctrines of Socrates, who flourished at Athens about 400 years B.C., and died a martyr in the cause of natural religion against paganism. He is said to have opened the career of moral philosophy in Greece, where he preceded Plato, from the writings of which latter the philosophy of Socrates is chiefly known, for he wrote nothing himself. While other philosophers boasted of their knowledge, he laid the greatest stress upon his ignorance, asserting that he knew nothing but this, that *he knew nothing*. Socrates led men from the contemplation of universal nature to that of themselves; a branch of philosophy which was inculcated in that famous inscription, *Know thyself!* The Socratic method of argument was that of leading an antagonist to acknowledge a proposition himself, by dint of repeated questions, in preference to that of laying it down authoritatively.——*Platonic philosophy*, a system of theology and morals, delivered by Plato about 350 years before Christ. Plato, it is said, laboured to re-establish natural religion by opposing paganism. The existence of the one God was zealously inculcated by him; and also the immortality of the soul, the resurrection of the dead, the everlasting reward of righteousness, and punishment of sin. It was Plato, too, who taught that the world was created by the *Logos* or *Word*; and that through knowledge of the word men live happily on earth and obtain eternal felicity hereafter. From him, also, came the doctrine of *grace*, and the inducements to monastic life; for he pressed upon his disciples that the world is filled with corruption; that it is the duty of the righteous to fly from it and to seek a union with God, who alone is life and health; that in the world the soul is continually surrounded with enemies; and that, in the unceasing combat through which it has to struggle, it can conquer only with the assistance of God or of his holy angels. "A happy immortality," said Plato, "is a great prize set before us, and a great object of hope, which should engage us to labour in the acquirement of wisdom and virtue all the time of our life." In morals, he taught that there is nothing solid and substantial but piety, which is the source of all virtues and the gift of God; that the love of our neighbour, which proceeds from the love of God as its principle, produces that sacred union which makes families and nations happy; that self-love produces that discord and division which reigns among mankind, and is the chief cause of our sins: that it is better to suffer wrong than to do it; that it is wrong to hurt an enemy or to revenge an injury received; that it is better to die than to sin; and that man ought continually to learn to die, and yet to endure life with all patience and submission to the will of God. —— The *Aristotelian philosophy*, which succeeded the Platonic, is characterised by a systematic striving to embrace all the objects of philosophy by cool and patient reflection.——The *Epicurean philosophy*, or the system of Epicurus, an Athenian. This teacher laid down, as the basis of his doctrine, that the supreme good consists in pleasure; a proposition that soon suffered a twofold abuse. On the one hand, by misconstruction, it was regarded as a barefaced inculcation of sensuality; on the other, adopted by the luxurious, the indolent, and the licentious, as a cloak and authority for their conduct; and hence it has happened that the name Epicurean is now used in an absolute sense to designate one minutely and luxuriously attentive to his food. Epicurus is reported to have written three hundred books, but of these none are extant; and the particulars of his philosophy, which have come down to posterity, are chiefly found in the writings of Lucretius, Diogenes, Laertius, and Cicero. His system, for which he is said to have been almost wholly indebted to Democritus, consisted of three parts: canonical, physical, and etherial. Soundness and simplicity of sense, assisted with some natural reflections, constituted all the method of Epicurus. His search after truth proceeded only by the senses, to the evidence of which he gave so great a certainty that he considered them as the first natural light of mankind. It is in the meanings allowed to the words pleasure and pain that everything which is important in the morals and doubtful in the history of the Epicurean system is contained. According to Gassendus, the *pleasure* of Epicurus consisted in the highest tranquillity of mind, united with the most perfect health of body; blessings enjoyed only through the habits of rectitude, benevolence, and temperance; but Cicero, Horace, Plutarch, and several of the fathers of the Christian church represent the system in a very different point of view. The disagreement, however, is easily reconciled, if we believe one side to speak of what Epicurus *taught*, and the other of what many of his followers, and still more of those who took shelter under his name, were accustomed to *practise*.——To the foregoing we must add the *Stoic philosophy*, or the doctrines of Zeno the stoic, whose morality was of a magnanimous and unyielding kind, formed to resist temptation to evil, and to render men callous to adversity: thus they maintained, among other things, that a man might be happy in the midst of the severest tortures; —the *Cynic philosophy*, the followers of

TO "PHILOSOPHISE" MEANS, TO REPLACE INTELLIGENTLY ON THE MOST ELEVATED SUBJECTS OF HUMAN KNOWLEDGE, AND TO DESCRIBE THEM CLEARLY.

THE RARE INTELLIGENCE AND MEMORY OF PHILOSOPHICAL PROPOSITIONS, WITHOUT THE ABILITY TO DEMONSTRATE THEM, IS NOT PHILOSOPHY.



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which affected a great contempt of riches and of all sciences except morality;—and the *Sceptical philosophy*, under Pyrrho, who affected to doubt everything.——In glancing at the *history of philosophy*, the student has abundant opportunities of observing its gradual development as a science, and tracing the progress and aberrations of the human mind—in themselves subjects most important and instructive. Departing from, or only partially retaining, the conflicting dogmas of the Greek and Roman philosophers, we find the scholastics of the middle ages engaged in a struggle for the attainment of intellectual excellence, under the influence of principles derived from the Christian faith and doctrine; yet the progress of philosophic truths was for a long time feeble, irregular, and vacillating. During the 15th century, there arose a freer and more independent spirit of inquiry, penetrating deeper into ultimate causes; till, at length, the cool and searching energy of Bacon enabled him to produce his *Novum Organum*, and to give a more substantial basis to the efforts of the intellect, by making observation and experience the predominant character of philosophy. Some there were, however, who disputed his laws, and hence new theories occasionally obtained a temporary distinction; but his doctrines, in a great measure, ultimately prevailed; and, at no distant period, the calm reasoning of Locke introduced into the study of the human mind the method of investigation which his great predecessor had pointed out. The subject, however, presents so wide and tempting a field for observation, that we dare not venture on it, lest, by unduly extending one article, we may be compelled to curtail others which equally demand our attention; and enough, perhaps, has been already said to direct the inquiring mind towards a study which, as it were, embraces all nature in its mighty grasp.

PHILOS'OPHER'S STONE, the object of alchemy by a long sought for preparation, by which, as they pretended, the baser metals might be converted into gold.

PHLEBOT'OMY, in the medical art, the practice of opening a vein for the purpose of letting blood.

PHLEGM, in anatomy, bronchial mucus; a thick tenacious matter secreted in the throat.——In chemistry, a watery distilled liquor, in distinction from a spirituous liquor.

PHLEGMA'SIÆ, in medicine, inflammations; the second order in the class *pyrexiæ* of Cullen's nosological arrangement, characterized by pyrexia, with topical pain and inflammation; the blood, after venesection, exhibiting a buffy coat.

PHLOGIS'TON, a word formerly used to denote the principle of inflammability; or pure fire fixed in combustible bodies, in distinction from fire in action, or in a state of liberty. But the theory having proved to be false, it is generally abandoned.

PHŒ'NIX, in fabulous history, a wonderful bird which the ancients describe as of the size of an eagle; its head finely crested with a beautiful plumage, its neck covered with feathers of a gold colour; its tail white, and its body purple. By some authors this bird is said to come from Arabia to Egypt every five hundred years, at the death of his parent bringing the body with him, embalmed in myrrh, to the temple of the sun, where he buries it. According to others, when he finds himself near his end, he prepares a nest of myrrh and precious herbs, in which he burns himself: but from his ashes he revives in the freshness of youth. The several eras when the phœnix has been seen are fixed by tradition. The first, we are told, was in the reign of Sesostris; the second in that of Amasis; and in the period when Ptolemy, the third of the Macedonian race, was seated on the throne of Egypt, another phœnix directed its flight towards Heliopolis. "When to these circumstances," observes an anonymous critical writer, "are added the brilliant appearance of the phœnix, and the tale that it makes frequent excursions with a load on its back, and that when, by having made the experiment through a long tract of air, it gains sufficient confidence in its own vigour, it takes up the body of its father, and flies with it to the altar of the sun, to be there consumed, it cannot but appear probable that the learned of Egypt had enveloped under this allegory the philosophy of comets." From late mythological researches, it is conjectured that the phœnix is a symbol of a period of 500 years, of which the conclusion was celebrated by a solemn sacrifice, in which the figure of a bird was burnt.—— *Phœnix*, in astronomy, one of the new southern constellations.

PHON'ICS, the doctrine or science of sounds; otherwise called *acoustics*.

PHONOL'OGY, the science or doctrine of the elementary sounds uttered by the human voice, including its various degrees of intonation.

PHOS'GENE, in chemistry, an epithet for giving or generating light. *Phosgene gas* is generated by the action of light on chlorine and carbonic oxyde gas.

PHOSPHORES'CENCE, a faint light or shining lucidity in any matter or substance, unaccompanied with sensible heat. It is exhibited by certain animals, as well as by vegetable and mineral substances. We have before had occasion to speak of the phosphorescence or luminous property of certain marine animals, which may be farther illustrated by the following interesting account (among others) lately given to the public in "Bennett's Voyage round the Globe:"—"During a dark and calm night, with transient squalls of rain, in lat. 43° S., long. 79° W., the sea presented an unusually luminous appearance. While undisturbed, the ocean emitted a faint gleam from its bosom, and when agitated by the passage of the ship, flashed forth streams of light which illuminated the sails and shone in the wake with great intensity. A net, towing alongside, had the appearance of a ball of fire followed by a long and sparkling train; and



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large fish, as they darted through the water, could be traced by the scintillating lines they left upon its surface. The principal cause of this phosphorescent appearance was ascertained by the capture of numerous medusæ, of flat and circular form, light-pink colour, and eight inches in circumference; the body undulated at the margin, spread with small tubercles on its upper surface, and bordered with a row of slender tentacles, each five feet long, and stinging sharply when handled. The centre of the under surface was occupied by a circular orifice, or mouth, communicating with an ample interior cavity, and surrounded by four short and tubular appendages, which, when conjoined, resembled the stalk of a mushroom—a plant to which the entire animal bore much resemblance in form. When captive, the creature displayed a power of folding the margin of the body inwards; but its natural posture in the water was with the body spread out, and the tentacles pendent. When disturbed, this medusa emitted from every part of its body a brilliant greenish light, which shone without intermission as long as the irritating cause persisted; but when that was withdrawn, the luminosity gradually subsided. The luminous power evidently resided in a slimy secretion which enveloped the animal, and which was freely communicated to water, as well as to any solid object. When thus detached, it could be made to exhibit the same phosphoric phenomena as the medusa itself; hence, it is reasonable to suppose, that the gleam of the ocean arose no less from the luminous matter detached from these creatures than from that which adhered to them; and I was further satisfied on this point, when I found that immersing the medusa in perfectly clear and fresh water communicated to that fluid all the scintillating properties of a luminous sea. Though the discovery of these medusæ was a satisfactory explanation of the phosphorescent appearance of the water, I had yet to learn that the latter effect was partly produced by living, bony, and perfectly organized fish: such fish were numerous in the sea this night; and a tow-net captured ten of them in the space of a few hours. They were a species of *Scopelus*, three inches in length, covered with scales of a steel-grey colour, and the fins spotted with grey. Each side of the margin of the abdomen was occupied by a single row of small and circular depressions, of the same metallic-grey hue as the scales; a few similar depressions being also scattered on the sides, but with less regularity. The examples we obtained were alive when taken from the net, and swam actively upon being placed in a vessel of sea water. When handled, or swimming, they emitted a vivid phosphorescent light from the scales, or plates, covering the body and head, as well as from the circular depressions on the abdomen and sides, and which presented the appearance of as many small stars, spangling the surface of the skin. The luminous gleam (which had sometimes an intermittent or twinkling character, and at others shone steadily for several minutes together) entirely disappeared after the death of the fish."—In a paper by this author, entitled "Observations on the Phosphorescence of the Ocean, made during a voyage from England to Sydney, N. S. Wales," which was read at one of the meetings of the Linnean Society, he remarks, that the sea, when phosphorescent, exhibits two distinct kinds of luminosity, one in which its surface appears studded with scintillations of the most vivid description, more particularly apparent as the waves are broken by the violence of the wind or by the passage of the ship through them, as though they were electric sparks produced by the collision, and which scintillations he considers are probably influenced, in some measure, by an electric condition of the atmosphere, as at those particular times they were observed to be much more vivid and incessant than at others. The other kind of luminosity spoken of has more the appearance of sheets or trains of whitish or greenish light, often sufficiently brilliant to illuminate the vessel as it passes through, being produced by various species of *salpa*, *beroe*, and other *mollusca*, while in the former case the scintillations which adhere in myriads to the towing net when drawn out of the water, probably originate in animalcules so minute that the only indication of their presence is the light which they emit. He further says, that the diffusion of the phosphoric light possessed by these molluscs does not solely depend on the creatures being disturbed (such as the passage of the ship through the water, or other somewhat similar causes), is evident, as a luminous mass may frequently be observed to gradually diffuse its brilliant light at some distance from the ship, without any apparent disturbance; and often during calm nights a similar glow of light is diffused over the water, without there being any collision of the waves to bring it forth; and if a light breeze springs up during the same night, the passage of the vessel leaves no brilliant trace in its wake, although the same spontaneous diffusion of light is observed in the water at some distance to be repeated as before; the phosphoric light being confined apparently solely to the occasional groups of molluscs, which when we succeeded in capturing them in the towing net, resembled for the most part pieces of crystal cut into various fantastic forms, round, oval, hexagonal, heptagonal, &c.——Many insects, like the lantern-fly, glow-worm, &c., emit a strong phosphoric light; so do various minerals. Sulphate of barytes gives a bright green light, acetate of potash a brilliant green light, and rock crystal, a red and then white light. Temperature has a marked effect on the emission of light by these bodies. When they are shining, the luminous appearance ceases if they are exposed to the cold of a freezing mixture. It becomes more vivid by applying heat; and if it has ceased, it may be renewed by applying a stronger heat, so that a piece of any solar







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phosphorus, which has apparently lost its power, may by heat be again made to shine. In the article "GLOW-WORM" will be seen some interesting particulars of that insect's lucid properties. To which we may here add that if a glow-worm is crushed, and the hands and face are rubbed with it, they exhibit a luminous appearance similar to that produced from phosphorus: also when a glow-worm is put into a phial, and the phial is immersed in water, a very beautiful irradiation takes place.

PHOSPHO'RIC ACID, in chemistry, an acid formed by a saturated combination of phosphorus and oxygen. When phosphorus undergoes combustion in oxygen gas, a great quantity of white fumes are produced and deposited in white flakes, and to this substance the name of *phosphoric acid* is given. It is generally manufactured from *bones*, which consist of phosphate of lime: but there are also other processes for obtaining it. Its component parts are 60 parts of oxygen and 40 of phosphorus. It combines with alkalies, earths, and metallic oxydes, forming with them salts denominated *phosphates*.—The *phosphorous acid*, which contains a smaller proportion of oxygen than the phosphoric acid, is obtained by the slow combustion of phosphorus at the common temperature of the air. Phosphorous acid forms compounds with alkalies, earths, and metallic oxydes, which are known under the name of *phosphites*.

PHOSPHORITE, in mineralogy, a species of calcareous earth.

PHOSPHORUS, in chemistry, a yellowish semi-transparent substance, of the consistence of wax, but brittle in cold frosty weather. In atmospheric air, it is luminous at common temperatures without emitting any material heat. It has a rough, disagreeable taste, and its odour resembles garlic. It is a compound of hydrogen with fermenting matters, by which the hydrogen is so gradually excited and evolved, and so masked, as to exhibit a slow combustion at the low heat of 44°; but on the excitement being increased to 148°, it rapidly combines with the oxygen of the air, burns with intense brilliancy, and displays a vivid flame, the union constituting phosphoric acid. Phosphorus dissolves in fat oils, forming a solution luminous in the dark at ordinary temperatures. A phial half filled with this oil, being shaken and suddenly uncorked, will give light enough to see the dial of a watch by night.—Inflammable match-boxes are usually prepared by putting into a small phial of glass or lead a bit of phosphorus, and oxydising it slightly by stirring it round with a red-hot iron wire. The phial should be unstopped only at the instant of plunging into it the tip of the sulphur match which we wish to kindle. The process of making phosphorus is as follows:—100 parts of burnt bones in powder are to be mixed with 40 parts of sulphuric acid, and they are to be suffered to remain in contact for two days, the mixture being frequently stirred. The whole is then to be poured upon a filter of cloth, and the liquor that passes through is to be added to a nitrous solution of lead; a white powder will be formed; this must be mixed with about one-fifth of its weight of charcoal powder, and exposed to a strong red heat in a porcelain retort, the bank of which is plunged in water; much gaseous matter will come over, some of which will inflame spontaneously, and at length a substance will drop out of the neck of the retort, and congeal under the water, which is phosphorus.

PHOSPHURET, in chemistry, a combination of phosphorus not oxygenated with a base; as phosphuret of iron, copper, or of lime, &c.—*Phosphuretted hydrogen*, is phosphorus dissolved in hydrogen gas, which when it comes in contact with common air burns with great rapidity, and if mixed with that air it detonates violently. Oxygen gas produces a still more rapid combustion than common air. When bubbles of it are made to pass up through water, they explode in succession as they reach the surface of the liquid, and a beautiful column of white smoke is formed. This gas is the most combustible substance known. Its combustion is the combination of its phosphorus and hydrogen with the oxygen of the atmosphere, and the products are phosphoric acid and water. It is supposed that many of those lights which are said to have been seen at night around burying-grounds and other places, when animal and vegetable substances are undergoing decomposition, arise, in part at least, from phosphuretted hydrogen.—*Bihydruret of phosphorus* is a second compound of hydrogen with phosphorus, obtained when solid phosphorous acid is heated out of contact with the air; the oxygen of the water of crystalization present converts part of the phosphorous acid into the phosphoric, while the hydrogen, uniting with a small proportion of phosphorus forms this gas. It is not spontaneously inflammable, but detonates when mixed with atmospheric air and heated to 212 degrees.

PHOTOGEN'IC DRAWING, the name given by Mr. H. F. Talbot, the inventor or discoverer of it, to a "new art," which, though not identical, is very similar to that of M. Daguerre; an account of which we have given, under the word DAGUERROTYPE. As this is a subject which has lately occupied the attention of artists and men of science generally, in no ordinary degree, and as important results are expected from it, we trust we shall be excused if we devote somewhat more than our usual maximum of space in laying it before our readers. Great zeal was exhibited in supporting the claims of the rival inventors, by their respective advocates on each side of the Channel, and every periodical devoted to the arts lent its willing pages to the full and free discussion of it. Foremost among these were the *Literary Gazette* and *Athenæum*; from the former of which we take the liberty of extracting a very explanatory account of it by Mr. Talbot himself:—"Many instruments have been devised at





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various times for abridging the labour of the artist in copying natural objects, and for insuring greater accuracy in the design than can be readily attained without such assistance. Among these may be more particularly mentioned the Camera Obscura and the Camera Lucida, which are familiar to most persons; certainly very ingenious and beautiful instruments, and in many circumstances eminently useful, especially the latter. Yet are there many persons who do not succeed in using them, and I believe that few are able to do so with great success, except those who, in other respects, are skilled in drawing. Up to a certain point, these inventions are excellent; beyond that point they do not go. They assist the artist in his work; they do not work for him. They do not dispense with his time; nor with his skill; nor his attention. All they can do is to guide his eye and correct his judgment; but the actual performance of the drawing must be his own. From all these prior ones, the present invention differs totally in this respect (which may be explained in a single sentence), viz. that, by means of this contrivance, it is not the artist who makes the picture, but the picture which makes itself. All that the artist does is to dispose the apparatus before the object whose image he requires: he then leaves it for a certain time, greater or less, according to circumstances. At the end of the time he returns, takes out his picture, and finds it finished. The agent in this operation is *solar light*, which being thrown by a lens upon a sheet of prepared paper, stamps upon it the image of the object, whatever that may chance to be, which is placed before it. The very foundation of the art, therefore, consists in this—eminently curious—natural fact, viz. that there exists a substance so sensitive to light as to be capable of receiving even its faint impressions. The whole possibility of the process depends upon this; for if no such substance existed *in rerum naturâ*, the notion of thus copying objects would be nothing more than a scientific dream. Moreover, it is not sufficient that the paper should be so sensitive as to receive the impressions of external objects; it is requisite also, that, having received them, it should retain them; and, moreover, that it should be insensible with regard to other objects to which it may be subsequently exposed. The necessity of this is obvious, for otherwise new impressions would be received, which would confuse and efface the former ones. But it is easier to perceive the necessity of the thing required than to attain to its realization. And this has hitherto proved a most serious obstacle to those who have experimented with this object in view. This was one of the few scientific inquiries in which Sir Humphry Davy engaged, upon which fortune did not smile. Either his inquiries took a wrong direction, or else, perhaps, the property sought for was of so singular a nature, that there was nothing to guide the search, or perhaps he despaired of it too soon; however this may be, the result undoubtedly was, that the attempt proved unsuccessful, and was abandoned. As Sir Humphry Davy himself informs us, 'No attempts have as yet been successful.' These words are quoted from his own account in the 'Journal of the Royal Institution for 1802.' The subject then dropped, and appears to have been no more spoken of for upwards of thirty years. When, in 1834, unaware of Davy's researches, I undertook a course of experiments with the same object in view, I know not what good star seconded my efforts; but, after various trials, I succeeded in hitting upon a method of obtaining this desideratum By this process, it is possible to destroy the sensibility of the paper, and to render it quite insensible. After this change it may be exposed with safety to the light of day; it may even be placed in the sunshine: indeed, I have specimens which have been left an hour in the sun without having received apparent deterioration. A fact, therefore, is thus established which is not without its importance in a theoretical point of view, besides its more immediate application to purposes of utility. With this kind of paper, eminently susceptible of being acted on by light, and yet capable of losing that property when required, a great number of curious performances may readily be accomplished. The most remarkable of these, is undoubtedly the copying the portrait of a distant object, as the façade of a building, by fixing its image in the camera obscura; but one perhaps more calculated for universal use is the power of depicting exact fac-similes of smaller objects which are in the vicinity of the operator, such as flowers, leaves, engravings, &c., which may be accomplished with great facility, and often with a degree of rapidity that is almost marvellous. The specimens of this art which I exhibited at the Royal Institution, though consisting only of what I happened to have with me in town, are yet sufficient to give a general idea of it, and to show the wide range of its applicability. Among them were pictures of flowers and leaves; a pattern of lace; figures taken from painted glass; a view of Venice copied from an engraving; some images formed by the solar microscope, viz. a slice of wood very highly magnified, exhibiting the pores of two kinds, one set much smaller than the other, and more numerous. Another microscopic sketch, exhibiting the reticulations on the wing of an insect. Finally: various pictures, representing the architecture of my house in the country; all these made with the camera obscura in the summer of 1835. And this I believe to be the first instance on record, of a house having painted its own portrait. A person unacquainted with the process, if told that nothing of all this was executed by the hand, must imagine that one has at one's call the genius of Aladdin's lamp And, indeed, it may almost be said, that this is something of the same kind. It is a little bit of magic





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realised:—of natural magic. You make the powers of nature work for you, and no wonder that your work is well and quickly done. No matter whether the subject be large or small, simple or complicated; whether the flower-branch which you wish to copy contains one blossom, or one thousand; you set the instrument in action, the allotted time elapses, and you find the picture finished, in every part, and in every minute particular. There is something in this rapidity and perfection of execution, which is very wonderful. But after all, what *is* nature, but one great field of wonders past our comprehension? Those, indeed, which are of every-day occurrence, do not habitually strike us, on account of their familiarity, but they are not the less on that account essential portions of the same wonderful whole. I hope it will be borne in mind by those who take an interest in this subject, that in what I have hitherto done, I do not profess to have perfected an art, but to have commenced one; the limits of which it is not possible at present exactly to ascertain. I only claim to have based this new art upon a secure foundation: it will be for more skilful hands than mine to rear the superstructure."—The above appeared in the Literary Gazette, Feb. 2, 1839; and to make the articles (viz. DAGUERREOTYPE and PHOTOGENIC DRAWING) more complete, we go to the same source (May 23, 1840), for the *Discovery of a method of permanently fixing, engraving, and printing from Daguerréotyphy, by Dr. Berres, of Vienna*, as in the case of ordinary copper-plates. This the editor designates "the FIRST GRAND USEFUL STEP in advance upon the new invention, and portends such a revolution in many processes (particularly engraving) now carried on by other means, as to be of universal importance." Dr. Berres, whose communication was addressed to the Imperial Society of Physicians at Vienna, after stating the powerful reasons which induced him to attempt what M. Daguerre had declared he gave up all hopes of realizing, thus describes the process:—"1. The necessary copperplates, as they are used at present in the daguerréotyphic plan, can effect only the permanently fixing, never the etching and printing, of copies therefrom. 2. In the heliographic etchings it is necessary that the picture be produced with the requisite intensity upon pure chemical silver plates. 3. The etching of the daguerréotyphic picture is produced through the influence of nitric acid, to be explained hereafter. 4. For the permanent fixing of the daguerréotyphic picture, a galvanic power is necessary. 5. For the changing of the daguerréotyphic picture into a deep metal etching, so as to be used as a means of printing, the chemical process of etching is finally of itself sufficient. My newly discovered method of managing the daguerréotyphic productions may be divided into two proceedings. 1. That of permanently fixing the design. 2. The changing the design, when once permanently fixed, into an etching upon the plate. The method of permanently fixing the daguerréotyphic design, with a transparent metal coating, consists in the following process:—I take the designs produced in the usual manner by the daguerréotyphic process, hold them for some minutes over a moderately warmed nitric acid vapour, or steam, and then lay them in nitric acid of 13° or 14° (Reaumur), in which a considerable quantity of copper or silver, or both together, has been previously dissolved. Shortly after being placed therein, a precipitate of metal is formed, and can now be changed to what degree of intensity I desire. Now I take the heliographic picture, coated with metal, place it in water, clean it, dry it, polish it with chalk or magnesia, and a dry cloth or soft leather. After this proceeding the coating will become clean, clear, and transparent, so that the picture can again, with all its properties, be easily seen. The greatest care and attention are required in preparing the daguerréotyphic impressions intended to be printed from. The picture must be carefully freed from iodine, and prepared upon a plate of the most chemically pure silver. That the production of this picture should be certain of succeeding, according to the experiments of Mr. Kratochwila, it is necessary to unite a silver with a copper plate; while, upon other occasions, without being able to explain the reasons, deep etchings or impressions are produced, without the assistance of the copper plate, upon pure silver plate. The plate has now to be varnished upon the spot where the acid ought not to have dropped. Next, after being held for one or two minutes over a weak warm vapour or steam, of 25° to 30° (Reaumur) of nitric acid, there must be poured over it a solution of gum Arabic, of the consistence of honey, and it must be placed in a horizontal position, with the impression uppermost, for some minutes. Then I plunge the plate, by means of a kind of double pincette, whose ends are protected by a coating of asphalt, or hard wood, in nitric acid, at 12° or 13° (Reaumur). Let the coating of gum slowly melt off, or disappear, and commence now to add, though carefully and gradually, and at a distance from the picture, a solution of nitric acid, of from 25° to 30°, for the purpose of deepening or increasing the etching power of the solution. After the acid has arrived at 16° to 17° (Reaumur), and gives off a peculiarly biting vapour, which powerfully affects the sense of smelling, the metal becomes softened; and then, generally at this point, the process commences of changing the shadow upon the plate into a deep engraving or etching. This is the decisive moment, and upon it must be bestowed the deepest attention. The best method of proving if the acid be strong enough is to apply a drop from that in which the plate now lies to another plate: if the acid make no impression, it is of course necessary to continue adding nitric acid; if, however, it corrode too deeply, then it is necessary to add water, the acid being too strong. The



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greatest care must be bestowed upon this process. If the potency of the acid have been carried too far, a fermentation and white froth will cover the whole picture, and thus not alone the surface of the picture, but also the whole surface of the plate will quickly be corroded. When, by a proper strength of the etching powers of the acid, a soft and expressive outline of the picture shall be produced, then may we hope to finish the undertaking favourably. We have now only to guard against an ill-measured division of the acid, and the avoidance of a precipitate. To attain this end, I frequently lift the plate out of the fluid, taking care that the etching power shall be induced to whatever part it may work the least; and seek to avoid the bubbles and precipitate by a gentle movement of the acid. In this manner the process can be continually applied to the proper points of strength and clearness of etching required upon the plates, from which it is proposed to print. I believe that a man of talent, who might be intrusted with this art of etching, and who had acquired a certain degree of dexterity in preparing for it, would very soon arrive at the greatest clearness and perfection, and from my experience, I consider, would soon be able to simplify the whole process. I have tried very often to omit the steaming, and the gum Arabic, but the result was not satisfactory, or the picture, very soon after, was entirely destroyed; so that I was compelled again to have recourse to them. The task which I have undertaken is now fully performed by placing in the hand of this learned body my method of etching and printing from the daguerréotyphic prints, which information being united to the knowledge and mechanical experience we already possess, and published to the world, may open a road to extensive improvements in the arts and sciences."

PHOTOM'ETER, an apparatus for measuring the intensity of light, or an instrument intended to indicate the different quantities of light, as in a cloudy or bright day, or between bodies illuminated in different degrees. Instruments for this purpose have been invented by Count Rumford, M. de Saussure, Mr. Leslie, and others. In Leslie's photometer the essential part is a glass tube, like a reversed siphon, whose two branches should be equal in height, and terminated by balls of equal diameter; one of the balls is of black enamel, and the other of common glass, into which is put some liquid. When the instrument is exposed to the solar rays, those rays that are absorbed by the dark colour heat the interior air, which causes the liquor to descend with rapidity in the corresponding branch, thus marking the intensity of the light; while no effect whatever is produced by the light upon the transparent ball.

PHRASE, a short sentence or expression; said to be *complete* when it conveys complete sense, as "to err is human"; and *incomplete* when it consists of several words without affirming anything. Any peculiar sentence or short idiomatic expression is also denominated a *phrase*.——In music, any regular symmetrical course of notes which begin and complete the intended expression.

PHRENITIS, in medicine, inflammation of the brain, attended with acute fever and delirium.

PHRENOL'OGY, a modern science, which professes to teach, from the conformation of the human skull, the particular characters and propensities of men, presuming that the powers of the mind and the sensations are performed by peculiar parts of the brain: the front parts being intellectual, the middle sentimental, and the hinder parts governing the animal propensities; the degree being in proportion to the projection or bulk of the parts. It was long ago observed by physiologists, that the characters of animals were determinable by the formation of the forehead, and that the intelligence of the animal, in most cases, rose or fell in proportion to the elevation or depression of the skull. But it was reserved to Drs. Gall and Spurzheim to expand this germ of doctrine into a minute system, and to map out the whole cranium into small sections, each section being the dwelling-place, or workshop, of a certain faculty, propensity, or sentiment, in all amounting to thirty-six, and to which certain names have been given in order to mark their specific qualities, their uses and abuses. Were phrenology an established science, and were it possible to draw unerring deductions from the data which it lays down, its discovery would be the greatest step ever made in mental philosophy, and its application the most beneficial ever used for the amelioration of the human race. By disclosing individual character, it would give security to social intercourse, and make communication prompt and easy. It would disclose real merit and expose unworthiness. The truly wise and good would at last attain their proper station in society; while the ignorant and vicious would be obliged to hide their diminished heads. But neither is phrenology an established science, nor, if it were, can it ever be applied with certainty to the illustration of individual character. Many of the organs are so heterogeneous in their nature, that they may indicate faculties or dispositions diametrically opposite, while others are furnished with compensating organs which balance the good or the evil of either, and thus render both ineffective. Thus you may have the organ of *destructiveness* developed largely, and yet be a peaceable and good man. How is this accounted for? Your organs of *cautiousness* and *benevolence* are brought to bear upon it, so that it is tamed down into a very harmless affair, and would not even hurt a fly. This fact ought never to be lost sight of; nor should we forget that although phrenologists have mapped the outer cranium into so many sections, no corresponding sections or divisions are to be found in the interior structure or arrangement of the brain. Were the brain divided into



ENGLAND SCARCELY AWOKE TO THE ART OF PAINTING BEFORE THE REIGN OF HENRY VIII., WHO PATRONISED HOLBEIN AND TORRESIANO.

THE MOST EMINENT LANDSCAPE PAINTERS ARE CLAUDE LORRAINE, POUSSIN, AND TITIAN; BUT MORE ESPECIALLY THE LAST.

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FACTS IN PHILOSOPHICAL CREEDS ARE LIKE FACTS IN SCIENCE, CONVINCING OR NOT, ACCORDING TO THE IDEAS OF THOSE WHO WITNESS THEM.

thirty-six cells, phrenologists might be justified in making out its exterior divisions; but it consists of one mass, and there is no kind of inward separation or distinction of structure corresponding with the outward boundaries of phrenological organs. We must confess, that, like other theoretical fancies which have occasionally sprung up, it has furnished a large fund of amusement, if not of instruction, and also given rise to many sagacious remarks from its votaries, upon the naughty propensities or amiable affections of their friends. But it may be worth while, at the same time, to inquire whether the advocates of phrenology have not discovered that they themselves possess some fondly cherished bump, by which their own exemplary character has been proved to their entire satisfaction, and so, out of pure gratitude to the science, had become its willing converts! We have more than once seen a lecturer arrange his craniological specimens, from the classic models of ancient Greece down to the orang-outang, and heard him descant, in marvellously learned terms, respecting the indications of amativeness, secretiveness, or destructiveness, &c., which they severally presented, and yet we still find ourselves in a most deplorable state of unbelief. It ought not therefore to surprise our readers if we endeavour to justify our heterodoxy, by quoting the following argumentative observations, which formerly appeared in the *Edinburgh Review*:—"The great boast of phrenology," says the reviewer, "is, that it does not rest on fantastical and arbitrary abstractions, but on a correct observation of the varieties of actual character, and is applied, not to a mere speculative and shadowy analysis of supposed qualities, but to the undeniable realities by which men are distinguished in common life. It takes no cognizance of such questionable existences as perception, memory, imagination, or judgment, but looks at once to the peculiarities by which the conduct and characters of men in society are marked to ordinary observation. Thus it finds one man actuated in all his conduct by a strong desire of fame, and immediately it sets down 'love of approbation' as an original principle of our nature, and looks about for a bump on some vacant part of the skull, by the sign of which the strength of this propensity may be measured. Another is distinguished by his love of money, and so Acquisitiveness is established as a primitive and inherent propensity! Another is a great talker, and forthwith Language is made a distinct and independent faculty! Another has a turn for making nut-crackers and mousetraps, and what can be so natural as to refer this to the bulk of his organ of Constructiveness? Another shows a great love for children, without indicating much benevolence to any grown creature—and nothing consequently can be plainer than that Philoprogenitiveness is an original sentiment. Some are quick at arithmetical operations—and what explanation can be so satisfactory, as that they have the faculty of Number very prominent? Others remember all the cross-roads they have *ever* gone through—and who can deny, therefore, that they are distinguished for their Locality? Some keep their papers, clothes, and furniture very nicely arranged—which can be attributed only to the degree in which they possess the faculty of Order; while there are others again, at least so Mr. Combe assures us, whose genius consists in peculiarly quick observation of size and weight of external substances—for whose sake accordingly it has been thought reasonable to create the special original faculties of size and weight! This, we must admit, is sufficiently simple and bold. But where is it to stop? If we are thus to take all the tastes, habits, accomplishments, and propensities, by which grown men are distinguished, in the concrete, and forthwith to refer them to some peculiar original faculty or principle, imagined for the mere purpose of accounting for them, the thirty-six original faculties of the phrenologists may at once be multiplied to 360 or 36,000, and room must be made upon the skull for as many new organs. Some men have a remarkable love for their children, and therefore we have a separate principle of *Philoprogenitiveness*. But other men have as remarkable a love for their parents—and why therefore should we not have a faculty of *Philoprogenitorness*, with a corresponding bump on some suitable place of the cranium? The affections of others, again, are less remarkable in the ascending and descending lines, and spread most kindly in the collateral. Can it be doubted, then, that we should have a Philadelphic principle, to attach us to our brothers and sisters—and another to keep us in charity with our cousins? If the fact, that some men are distinguished for their love of wealth is a sufficient ground for assuming that Acquisitiveness is an independent and original principle in our nature, should not the fact that other men being distinguished for their love of dogs and horses justify us in refering this also to an inherent principle? or upon what grounds can we refuse the same honour to the love of card-playing, gossiping, or agriculture? Some men, nay some whole families are notorious for lying, though addicted to no other immorality; some—the natural prey of the former—are proverbial for their credulity; some for inordinate merriment and laughter; some for envy; some for love of society; some for telling long stories; some for love of noise; some for horror of it. Most of these, it appears to us, are quite as well entitled to the rank of primitive faculties or propensities as any on the phrenologist's list. Undoubtedly they mark as conspicuously the characters and manners of the persons to whom they belong, and are not in general so easily resolved into more general principles. Why then should they be excluded from the scheme of the phrenologists, and left without any organs in their improvident distribution of the skull? Nay, upon these principles, why should there not be a

EDUCATION IS BOTH MORALLY AND INTELLECTUALLY POWERFUL IN BREAKING DOWN THE STRONG HOLDS OF VICE AND IDLENESS.



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separate original faculty, prompting us to the practice of skating, sailing, or planting—or towards the study of botany, mineralogy, anatomy, bookbinding, chemistry, gymnastics, or any of the other five hundred pursuits to which idle men are found to betake themselves, with an engrossing and often passionate partiality?"

PHRYGA'NEA, in natural history, a genus of insects of the order *Neuroptera*, of which there are nearly sixty species. One of the largest species is the *Phryganea grandis*, about an inch in length. The larva of this insect is known by the name of the *caden-worm*, and is frequently used by anglers as a bait. When arrived at full growth, it fastens its case or tube by several silken filaments to the stem of some water plant, or other convenient substance, in such a manner as to project a little above the surface of the water, and, casting its skin, changes to a chrysalis of a lengthened shape, displaying the immature limbs of the future phryganea, which in a fortnight emerges from its confinement.

PHRY'GIAN STONE, a light spungy stone resembling a pumice, formerly used in dyeing, and said to be drying and astringent.

PHTHI'SIS, in medicine, a consumption occasioned by ulcerated lungs. [See CONSUMPTION.]

PHYLACTERY, among the ancients, a general name given to all kinds of spells, charms, or amulets, which they wore about them, to preserve them from disease or danger. It is more particularly used to signify a slip of paper on which was written some text of Scripture, especially of the Decalogue, which the more devout Jews wore on the forehead, breast, or neck, as a badge of their religion.——Among the primitive Christians, a *phylactery* was a case in which they inclosed the relics of the dead.

PHYL'LITE, in the history of fossils, a petrified leaf, or a mineral having the figure of a leaf.

PHYS'ALITE (sometimes called *pyrophysalite*, because it intumesces in heat), a mineral of a greenish white colour, a subspecies of prismatic topaz.

PHYS'ETER, the *cachalot*, in natural history, a genus of mammalia of the order *cete*. There are four species: the *Physeter macrocephalus*, or the spermaceti whale, grows to the length of sixty feet, and the head is nearly one third of the bulk of the whole animal. It is one of the most difficult of all the whales to be taken, and survives for several days the deepest wounds given it by the harpoon. Its skin, oil, and tendons are all converted by the Greenlanders to some valuable purpose. The spermaceti is found in the head. Ambergris is obtained from the faeces of the animals. The origin of this substance had long baffled the curiosity of the naturalist, but is now said to be unquestionably ascertained.

PHYS'ICAL, an epithet denoting that which relates to nature or natural productions, as opposed to things moral or imaginary. We speak of physical force or power, with reference to material things: thus, armies and navies are the *physical* force of a nation; whereas knowledge, skill, &c., constitute *moral* force.——*A physical body* or substance, is a material body or substance, in distinction from spirit or metaphysical substance.——*Physical education*, the education which is directed to the object of giving strength, health, and vigour to the bodily organs and powers.

PHYSI'CIAN, one whose profession is to prescribe remedies for diseases, and who is consequently relied on as being skilled in the art of healing. Physicians were held in high estimation in Greece, and the name of Hippocrates is an honour to the profession. The study of physic, indeed, being looked upon as a branch of philosophy, it was sure to command respect in a land where philosophy was in such high repute. It was not exactly so in Rome. As long as the Romans led a hardy and laborious life, physicians were dispensed with, and totally unknown amongst them, without any bad consequence ensuing. But the luxury of the table, and the excesses with which it was attended, introduced diseases; and as one evil produces another, so diseases introduced physic, to which they had before expressed much repugnance. In the 535th year of Rome, some physicians had come from Greece to that city, but had no fixed establishment there till the year 600. Physic at that time included pharmacy and surgery; for physicians not only compounded medicines, but performed all surgical operations themselves, though they had then but a very imperfect knowledge of anatomy. During the commonwealth there were no physicians or surgeons in the army, but the ancient citizens, who had almost all served in the army, administered medicines, and the soldiers dressed each other's wounds with some well-known remedies used in the city. The emperors, however, having a particular respect to their own health, took physicians upon every expedition. The art of healing was not held in high estimation at Rome, but was sometimes professed by slaves; Cæsar granted them, as a singular favour, the freedom of the city; and their reputation increased with the luxury of the people.

PHYSICO-THEOLO'GY, theology or divinity illustrated or enforced by physics or natural philosophy.

PHYSICS, or NATURAL PHILOSOPHY, a science of vast extent, comprehending whatever tends to elucidate the doctrine of natural bodies, their phenomena, causes, and effects, with their various affections, motions, and operations.

PHYSIOGNOMICS, among physicians, signs in the countenance which serve to indicate the state, disposition, &c., both of the body and mind: and hence the art of reducing these signs to practice is termed physiognomy.

PHYSIOG'NOMY, the art of discovering the predominant temper or other characteristic qualities of the mind by the features of the face or external signs of the counte-



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nance. Whatever be thought of the possibility of laying down strict rules for such judgments, it is a fact of every-day occurrence, that we are, almost without reflection on our part, impressed favourably or unfavourably in regard to the temper and talents of others by the expression of their countenances. No study, says Lavater, mathematics excepted, more justly deserves to be termed a science than physiognomy. It is a department of physics, including theology and belles-lettres; and in the same manner with these sciences may be reduced to rule. It may acquire a fixed and appropriate character; it may be communicated and taught. Physiognomy, he adds, is a source of pure and exalted mental gratification. It affords a new view of the perfection of Deity; it displays a new scene of harmony and beauty in his works; it reveals internal motives, which, without it, would only have been discovered in the world to come. That it is a subject of great interest, every person of reflection will readily grant; but the student must be on his guard against a general application of rules with which the experience of others has furnished him. We all have some sort of intuitive method by which we form our opinions; and though our rules for judging of men from their appearance may often fail, we still continue to trust in them; and naturally feel surprised if a vacant-looking man should prove extremely sagacious, or a morose-looking one should give us evidence of his kind disposition by performing some generous and disinterested action.

PHYSIOGNOTYPE, a machine for taking an exact imprint or cast of the countenances, lately invented by a Parisian. This instrument is a metallic, oval plate, pierced with a large quantity of minute holes very closely together, and through each of which a wire passes with extreme facility. These needles have the appearance of a brush. The whole is surrounded with a double case of tin, which contains warm water, in order to keep the instrument of a proper temperature with the blood. If any figure be applied against this brush of needles, it will yield to the slightest pressure, and leave an exact mould, taking up only about two seconds.

PHYSIOLOGY, a term strictly signifying a discourse on nature; but usually confined to that branch of physical science which treats of the different functions and properties of living bodies: that is, of bodies which grow and reproduce their kind; a definition which includes vegetables and animals. It is distinct from physics in general, inasmuch as it regards organized bodies alone: and from metaphysics, inasmuch as it does not presume to treat of mind. Physiology is, in effect, what Dr. Darwin has called "zoonomia, or the laws of organic life." The functions of animal life are not only more complicated in the same individual than those of vegetation, but also more diversified in the different classes into which animals are divided: so that the physiology of each class has its peculiar laws.

PI'A MATER, in anatomy, the third tunic or membrane of the brain, which not only extends over the whole surface of the brain, but insinuates itself into all its cavities.

PIANO-FORTE, a musical stringed instrument, the strings of which are extended over bridges rising on the sounding-board, and are made to vibrate by means of small covered hammers, which are put in motion by keys. It has been gradually improved, till it has become one of the most important instruments in all domestic musical entertainments.

PIAZ'ZA, an Italian name for a portico or covered walk. The word literally signifies a broad open place or square; whence it came to be applied to the walks or porticoes surrounding them.

PI'CÆ, in ornithology, an order of birds in the Linnæan system under the class *Aves*, comprehending such as have their bill compressed and convex, including the parrot, crow, raven, magpie, cuckoo, jay, &c.

PICK'ET, or PIC'QUET, in military discipline, a certain number of men, horse or foot, who do duty as an outguard, to prevent surprises. Also, a punishment which consists in making the offender stand with one foot on a pointed stake.—*Pickets*, in fortification, sharp stakes, sometimes shod with iron, used in laying out ground, or for pinning the fascines of a battery. In the artillery, pickets five or six feet long are used to pin the park lines; in the camp, they are used about six or eight inches long to fix the tent cords, or five feet long in the cavalry camp to fasten the horses.

PIC'ROLITE, a green-coloured mineral, composed chiefly of the carbonate of magnesia.

PIC'ROMEL, the characteristic principle of bile; named from two Greek words, signifying *bitter* and *honey*, in allusion to its sharp, bitter and sweet taste.

PICROTOX'INE, or PICROTOX'IA, in chemistry, the bitter and poisonous principle of the cocculus Indicus. It crystalizes in small white needles or columns.

PICTS' WALL, an ancient wall begun by the emperor Adrian, A.D. 123, on the northern boundary of England, from Carlisle to Newcastle, to prevent the incursions of the Picts and Scots. It was first made only of turf, strengthened with palisades, till the emperor Severus coming in person into Britain, had it built with stone; and Aetius, the Roman general, rebuilt it with brick, A.D. 430. Some remains of this wall are still visible in parts of Northumberland and Cumberland.

PIC'TURESQUE, an epithet denoting that peculiar kind of beauty which, either in a prospect, a painting, or a description, strikes the mind with great power, or imparts to it agreeable sensations. In the theory of the arts, the word *picturesque* is used as contradistinguished from *poetic* and *plastic*. The *poetical* has reference to the fundamental idea to be represented,—to the painter's conception of his subject; whilst



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the *picturesque* relates to the mode of expressing the conception, the grouping, the distribution of objects, persons, and lights. The poetical part of a picture, as well as its mechanical execution, may be without fault, and yet the picture be a total failure as regards the picturesque.

PIECE, in commerce, signifies sometimes a whole, and sometimes a part of the whole. In the first sense, we say a *piece* of cloth, &c. meaning a certain quantity of yards regulated by custom; being yet entire and uncut. In literature, we speak of a short composition, in prose or verse, as a *piece;* and in the same way of a musical composition, as a *piece* of music.——*Pieces*, in the military art, include all sorts of cannon and mortars. Large guns are called battering-pieces; smaller guns are called field-pieces. We also say, a fowling-piece. ——In heraldry, the honourable *pieces* of the shield are the chief, fesse, bend, pale, bar, cross, saltier, chevron, and in general all those which may take up one-third of the field.

PIE'POUDRE, an ancient court of record, incident to every fair or market, and of which the steward of him who has the toll of the market is the judge. According to the most satisfactory derivation, the term implies that the court is that of petty dealers or chapmen, who assemble on those occasions. It was instituted to administer justice for all commercial injuries done in that very fair or market, and not in any preceding one; so that the injury must be done, complained of, heard, and determined within the compass of one and the same day, unless the fair continues longer.

PIER, a very strong stone wall or mass of solid stone work running into the water, to resist the force of the sea, to support the arches of a bridge, or the quay of a wharf, and to withstand the dashing of waves.—Also, a part of the wall of a house between windows.

PIE'RIAN, an epithet given to the muses, from Mount Pierus, in Thessaly, which was sacred to them; or from their victory over the nine daughters of the Macedonian king Pierus.

PI'ETIST, a person belonging to a sect of Protestants which sprung up in Germany, in the latter part of the 17th century. They professed great strictness and purity of life, affecting to despise learning and ecclesiastical polity, as also forms and ceremonies in religion, and giving themselves up to mystic theology.

PI'ETY, that holy principle which consists in veneration accompanied with love for the Supreme Being; and which manifests itself, in practice, by obedience to God's will and a pure devotion to his service.—Piety both towards God and man was one of the virtues held in most esteem by the ancients, and is therefore commemorated on innumerable medals, sometimes under the figure of a female carrying children, or of Æneas bearing his father, &c., but more frequently under that of a female standing at an altar.

PIEZOM'ETER, an instrument for ascertaining the compressibility of water, and the degree of such compressibility under any given weight.

PI'GEON, in ornithology, a domestic bird of the genus *Columba*, of which there are many varieties, as the *rock* pigeon, the *carrier* pigeon, *powters*, *shakers*, *tumblers*, *croppers*, *runts*, &c., names which are indicative of their respective peculiarities.—In their wild state the pigeon tribe live on high trees, generally in flocks. They feed principally on seed, retaining their food in the crop for some time. The greater proportion of the species build on elevated situations, forming a loose nest of small twigs, and wide enough to contain both the parent birds: the female lays two eggs, several times a year. They pair for life, though they assemble in flocks; and have no song, their note being a simple cooing. They walk well, and fly with great swiftness, continuing on the wing for a long time. Of all the varieties of the pigeon, the most remarkable for its attachment to its native place is the *carrier*, which is distinguished from the others by a broad circle of naked white skin round the eyes. This species has for ages been used for carrying messages of importance where expedition and secrecy were required. When a letter is tied under the carrier's wing, and the bird is set at liberty, from some inconceivable instinct it directs its flight, in a straight line, to the very spot from whence it had been taken.—In America there is a species of pigeons called the passenger or wild pigeon, which abounds most prolifically, and is of a bluish slate-colour with a white belly. These birds visit the different states in innumerable quantities, but are beyond measure abundant in the western states, where, according to Wilson, the ornithologist, some of their "breeding places," as they are termed, extend over a space of thirty or forty miles. They are taken by means of clap-nets, managed by a person concealed in a hut composed of brushwood, who in this way will sometimes take from ten to forty or fifty dozens at a sweep. Audubon, in speaking of these immense flocks of pigeons, and their extraordinary powers of flight, remarks, that they have been killed in the neighbourhood of New York, with their crops still filled with rice, collected by them in the fields of Georgia and Carolina, the nearest point at which this supply could possibly have been obtained; and as it is well ascertained that, owing to their great power of digestion, they will decompose food entirely in twelve hours, they must have travelled between 300 and 400 miles in six hours, making their speed at an average of about one mile in a minute: and this would enable one of these birds, if so inclined, to visit the European continent, as swallows undoubtedly are able to do, in a couple of days. Such, indeed, are their numbers, that the air is described as "literally filled with pigeons; the light of the noon-day becomes dim, as during an

THE GREAT SOURCE OF PICTURESQUE BEAUTY IS NATURE IN ALL HER ORIGINAL VARIETY AND IRREGULAR GRANDEUR.

OBJECTS MAY BE MADE PICTURESQUE, BUT WE ARE LIKELY TO MISS THE PICTURESQUE AND FALL INTO THE RIDICULOUS.



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IN EVERY COUNTRY WHERE POPERY WAS ESTABLISHED PILGRIMAGES WERE COMMON, AND IN MANY THEY STILL EXIST.

IN ENGLAND THE SHRINE OF ST. THOMAS A BECKET WAS THE CHIEF RESORT OF PILGRIMS, AND IN SCOTLAND ST. ANDREW'S.

eclipse." It may not, perhaps, be out of place to attempt an estimate of the number of pigeons contained in one of those mighty flocks, and the quantity of food daily consumed by its members. The inquiry will show the astonishing bounty of the Creator in His works, and how universally this bounty has been granted to every living thing on the vast continent of America. We shall take, for example, a column of one mile in breadth, which is far below the average size, and suppose it passing over us without interruption for three hours, at the rate mentioned above, of one mile per minute. This will give us a parallelogram of 180 miles by 1, covering 180 square miles; and allowing two pigeons to the square yard, we have 1,115,136,000 pigeons in one flock; and as every pigeon consumes fully half-a-pint of food per day, the quantity must be 8,712,000 bushels per day, which is required to feed such a flock.——Only four species of the common pigeon are found wild in Europe, from one of which are descended all the varieties which are found domesticated. Of the *gallinaceus*, the great-crowned pigeon, or gouza, bears the greatest resemblance to the *Gallinæ* in size; it is a native of New Guinea, and various isles of the Eastern Archipelago. The Nicobar pigeon is distinguished for its brilliant plumage: it runs along the ground, and builds its nest like a partridge's: it inhabits Sumatra, Nicobar, and other islands in the East. Of the ordinary pigeons, the ring pigeon is the largest, and is migratory. The stock pigeon has an affinity to the former kind, but flies in large flocks, and emigrates about October. The biset lives in flocks, and nestles in the holes of trees, and in rocks.——Pigeons range to a great distance for food, particularly for salt; and they are much distressed by excess of cold or heat.

PIG'MENTS, preparations of various kinds used in painting and dyeing, to impart the colours required. They are obtained from animal, vegetable, and mineral substances.

PIKE, in ichthyology, a fish of the genus *Esox*, which abounds in most of the lakes of Europe. It is remarkable for its voracity, and also for its longevity.——*Pike*, in military affairs, a long slender staff with a pike or spike at the end. Its use among soldiers is superseded by the bayonet.

PILASTER, in architecture, a square column, sometimes insulated, but more frequently pilasters are set within a wall, and project only one-quarter of their diameter. The pilaster is different in different orders; it borrows the name of each, and has the same proportions, and the same capitals, members and ornaments, with the columns themselves.

PIL'CHARD (*clupea pilcardus*), in ichthyology, a fish resembling the herring, but rounder and thicker. Pilchards appear on the Cornish coast about the middle of July, in immense numbers, and furnish a considerable article of commerce.

PILE, a large stake or beam, pointed and driven into the earth, as at the bottom of a river, or in a harbour, for the support of a bridge or other superstructure.——In heraldry, one of the lesser ordinaries, resembling a pile, as above described.——*Pile-driver*, a machine for driving pointed beams of wood into beds of rivers or soft foundations, on which to raise bridges and buildings.——*To pile arms*, in military tactics, is to place three muskets, with or without fixed bayonets, in such a relative position that the butts shall remain firm upon the ground, and the muzzles be close together in an oblique direction.——*Pile*, in coinage, a kind of puncheon, which, in the old way of coining with the hammer, contained the arms, or other figure and inscription, to be struck on the coin. We still call the arms-side of a piece of money the pile, and the head the cross, because, in ancient coins, a cross usually took the place of the head.——The fine hairy substance on the surface of cloth, velvet, &c. is also called the *pile*.

PILENTUM, in antiquity, an easy kind of chariot used by the Roman ladies at games and religious processions.

PILE'US, in antiquity, a hat or cap worn by the Romans, during any indisposition which prevented them from appearing safely with their heads uncovered, as was the general custom. The *Pileus* was also worn by such as had lately received their freedom, because, on having their liberty granted, they were constantly shaved: the *Pileus* therefore being necessary on this account, was also esteemed a badge of liberty; hence *pileo donari* signifies to be made free.——*Pileus*, in botany, the cap of a fungus, expanding horizontally, and covering the fructifications.

PIL'GRIM, one that travels to a distance from his own country to visit a holy place for devotional purposes. In the middle ages, kings, princes, bishops, and others made *pilgrimages* to visit the holy sepulchre at Jerusalem, in pious devotion to the Saviour. This was permitted while Palestine was held by the Saracens; but when the Turks obtained possession of that country, the Christian pilgrims were visited with the greatest indignities, and their repeated complaints occasioned the excitement which led to the crusades. In subsequent times pilgrimages to Rome, Compostella, Loretto, Tours, and other places where the relics of martyrs and saints attracted the notice of devotees, have been common; and pilgrims to this day travel to Rome, where they are provided for in establishments founded especially for their reception and entertainment.

PIL'LAR, a kind of irregular column, either too massive or too slender for regular architecture; the parts and proportions of which, not being restricted to any rules, are arbitrary.——In the upper compartment of the FRONTISPIECE to this volume will be seen the monumental pillar proposed to be erected, by public subscription, in Trafalgar-square, London, to commemorate the splendid achievements of Britain's greatest naval hero, the intrepid Nelson. It was re-



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solved to erect such a monument as should not only record the glorious deeds of him whose memory it was especially intended to honour, but also be a worthy memento of the prowess of the British navy, and an incentive to future deeds of heroism. Artists were accordingly invited to compete in producing plans for this national work; and from among the numerous designs which were submitted, the one by Mr. Bailton (of which we give the particulars) was selected. The *pedestal* has on its four sides *bassi relievi* of Nelson's principal engagements. 1. The boarding of the San Joseph, at the battle off St. Vincent. 2. The battle of the Nile; Nelson, wounded, receiving from Captain Berry, in the cabin of the Vanguard, the sword of the commander of the Spartiate. 3. The interview at Copenhagen, between Nelson and the Crown Prince: and 4. The hero, fatally wounded, being carried from the deck of the Victory, at the battle of Trafalgar. Each of these compartments to be 18 feet square; and the figure of Nelson, in each, 7 feet high. The pedestal is raised on a flight of fifteen steps, at the angles of which are African lions in a recumbent posture. The *shaft* is fluted throughout, the base being richly ornamented, the lower torus with a cable, the upper with oak leaves. The *capital* is taken from the bold and simple example of Mars Ultor, at Rome; and from it rises a circular pedestal, ornamented with a wreath of laurel and lions' heads, and surmounted by a statue of Nelson. A figure of Victory is introduced on every side of the capital. Dimensions: the *base*, 10 ft. high, 104 ft. wide; *pedestal*, 39 ft. high, 20ft. 6 in. wide; *base of column*, 9 ft. high; *shaft*, 90 ft. high, 12 ft. wide; *capital*, 14 ft. high; *statue*, 17 ft. high; *pedestal* for ditto, 14 ft. Total height, 193 feet. The estimated expense is 30,000*l.*; viz. masonry, 16,000*l.*, sculpture, 14,000*l.* A comparative view of this with other monumental pillars will enable the reader to form a better judgment of it.

| Date. | | Height of Capital. |
|---|---|---|
| 118 Trajan's column, | Rome, | 115 ft. |
| 163 Antonine's column, | Rome, | 123 |
| 1672 The Monument, | London, | 172 |
| 1806 Napoleon's column, | Paris, | 115 |
| 1832 Duke of York's, | London, | 109 |
| 1840 Nelson's, | London, | 162 |

[We beg to refer our readers to a sketch of the Life of Nelson, given at considerable length in our *Biographical Treasury*.]

PIL'LORY, an instrument of punishment, consisting of a frame of wood erected on posts, made to confine the head and hands of a criminal, in order to expose him to view, and to render him publicly infamous. According to Sir Henry Spelman, it was at first peculiarly intended for the punishment of bakers who should be found faulty in the weight or fineness of their bread. In 1816, this mode of punishment was abolished in all cases except that of perjury, and it has now altogether fallen into desuetude. —It was anciently a post erected in a cross-road by the lord of the manor, with his arms upon it as a mark of his seigniory, and sometimes with a collar to fix criminals to it.

PI'LOSE, in botany, hairy; a *pilose leaf* is one covered with long distinct hairs. A *pilose receptacle* has hairs between the florets.

PI'LOT, one who has the care of a ship and superintends the navigation, either along the sea coast, or upon the main ocean. In a stricter sense, a pilot is one whose profession it is to direct a ship's course when near the coast, and into and out of the harbours, bays, roads, or rivers, &c. within his peculiar district.——*Pilotage*, the compensation made or allowed to a pilot.

PI'LOT-FISH, in ichthyology, a species of *Gasterosteus*, of an oblong shape. It derives its name from the circumstance of its often accompanying ships.

PI'LUM, a missile weapon used by the Roman soldiers, and in a charge darted upon the enemy. Its point was so long and small, that after the first discharge it was generally so bent as to be rendered useless.

PIMELITE, in mineralogy, an earthy substance of an apple-green colour, unctuous, soft, and not fusible by the blow-pipe. It is a variety of steatite, and is supposed to be coloured by nickel.

PIMENTA, or PIMENTO, Jamaica pepper, popularly called all-spice. The tree producing this spice is of the genus *Myrtus*, and grows spontaneously in Jamaica in great abundance; its flower consists of five petals, and its fruit is a roundish berry, containing a pulpy matter about the seeds. The fruit is gathered when green, and exposed to the sun for many days on cloths, frequently shaking and turning them till thoroughly dry. Pimenta abounds with a fragrant essential oil, which is separated in great quantity by distillation, and is so heavy that it sinks in water.

PIMPERNEL, in botany, the name of several plants of different genera. The principal are the Water Pimpernel, of the genus *Veronica*; the Scarlet Pimpernel, of the genus *Anagallis*; and the Yellow Pimpernel, of the genus *Lysimachia*.

PIMPINEL'LA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. The species are mostly perennials.

PIN, a small pointed instrument made of brass wire and headed; used chiefly by females for fastening and adjusting their dress. The perfection of pins consists in the stiffness of the wire and its whiteness, in the heads being well turned, and in the fineness of the points. In making this little article there are no less than fourteen distinct operations: 1. *straightening the wire*; 2. *pointing*, which is executed on two iron or steel grindstones, by two workmen, one of whom roughens down, and the other finishes; 3. *cutting into pin lengths*; 4. *twisting of the wire for the pin heads*; 5. *cutting the heads*, 12,000 of which may be performed by a skilful workman in an hour; 6. *annealing the heads*, by putting them into an iron ladle, making them red-hot over an open fire, and then throwing them



THE ANCIENT RUDE PILLARS WHICH ARE FOUND IN THIS COUNTRY HAVE BEEN PRINCIPALLY THE WORKS OF THE DRUIDS.

VARIOUS INSTANCES OF MONUMENTAL PILLARS ERECTED BY THE PATRIARCHS ARE RELATED IN THE OLD TESTAMENT.

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into cold water; 7. *shaping and fixing on the heads*, which operations are performed by the same workman, who can complete 1500 an hour; 8. *yellowing or cleaning the pins*, by boiling them for half an hour in wine lees, sour beer, or solution of tartar; 9. *whitening or tinning*, which is performed by laying alternate strata of grain, tin, and the pins in a copper pan, and boiling them together for about an hour; 10. *washing the pins*, in pure water; 11. *drying and polishing* them, in a leathern sack filled with coarse bran, which is agitated to and fro by two men; 12. *winnowing*, or separating them from the bran; 13. *pricking the papers* for receiving the pins; and 14. *papering* them, which is done by children, who acquire the habit of putting up 36,000 per day! Well, indeed, may it be said, that the pin manufacture is one of the greatest prodigies of the division of labour. It furnishes 12,000 articles for the sum of three shillings, which have required the united diligence of fourteen skilful operatives. The above is a brief outline of the hand manufacture; but it must not be forgotten that several inventions have been employed to make them, in part at least, by machinery. The consumption for home sale and export amounts to 15,000,000 of pins daily, for this country alone!——The name of *pin* is given to any piece of metal or wood sharpened or pointed in the shape of a pin which serves to fasten; as, the *linch-pin*, which locks the wheel to the axle; also the screw of a musket barrel, &c. In ship building, the larger pins of metal are usually called *bolts*, and the wooden pins, *treenails*. A very small wooden pin is called a *peg*.

PINA'CIA, among the Athenians, were tablets of brass inscribed with the names of all the citizens in each tribe, who were duly qualified and willing to be judges of the court of Areopagus. These tablets were cast into one vessel provided for the purpose, and the same number of beans, a hundred being white and all the rest black, were thrown into another. Then the names of the candidates and the beans were drawn out one by one; and they whose names were drawn out together with the white beans were elected judges or senators.

PIN'CERS, very useful implements of carpenters, smiths, and other artizans, being a double lever, the fulcrum of which is in the joint.

PINCH'BECK, in metallurgy, an alloy, containing three parts of zinc and four of copper.

PINDARE'ES, the name given in British India to the hordes of mounted robbers who, for several years (since 1812), infested the possessions of the East India Company. These freebooters have existed since 1761, but made themselves particularly formidable in the 19th century. They were descended mostly from the caste of Mohammedan warriors, which formerly received high pay from the Indian princes; and these latter, after becoming tributary to the British, secretly excited the Pindarees to attack the Company. In 1817 the marquis of Hastings, then governor-general, determined on their destruction, and being attacked on all sides, they were conquered and dispersed.

PINDAR'IC, an ode in imitation of the odes of Pindar, the prince of Greek lyric poets. [See ODE.]

PINE *(pinus)*, in botany, a genus of trees, of many species, some of which furnish timber of the most valuable kind. The magnificent cedar of Lebanon is one species, remarkable for its size and durability. The Canadian or yellow pine *(pinus resinosa)*, sometimes, though improperly, called the wild pine of Norway, supplies excellent deals for buildings, and often grows straight to the height of eighty feet. The wood is compact and fine-grained, rendered heavy by resinous matter, and is highly esteemed for its strength and durability. When young it is a beautiful tree, and the vegetation is always vigorous. The white pine *(pinus strobus)* is the loftiest tree in the United States of America, and its timber, though not without essential defects, is consumed in much greater quantities, and for a far greater variety of purposes, than any other. It attains the height of 150 feet, or more, with a trunk five feet in diameter. The *pinus lambertiana* is a species of gigantic size: the trunk rises from 150 to upwards of 200 feet in height, and is from seven to nearly twenty feet in diameter. The timber is white, soft, and light, and produces an abundance of a pure amber-coloured resin, which, when the trees are partly burned, acquires a sweet taste, and in this state is used by the natives as a substitute for sugar. The seeds are eaten either roasted, or pounded into coarse cakes for use during the winter season.——We cannot specify all the varieties, from their number; the wild pine, or Scots fir of Europe, must not, however, be omitted. The trunk attains the height of eighty feet, by four or five in diameter, and the timber is applied to a great variety of uses, and especially is excellent for masts. These, together with the timber in other forms, are exported from Riga, Memel, Dantzic, and other parts of the north to the other maritime states of Europe, and particularly to Great Britain. Large vessels have been constructed of this pine; and though they are less durable than those built of oak, they come next to it. In those districts where it abounds, houses as well as furniture are generally constructed of it, and its lightness and stiffness render it superior to any other materials for beams, girders, joists, rafters, &c. It also furnishes excellent charcoal for forges; but a more important product is the resinous matter, consisting of tar, pitch, and turpentine, of which articles it supplies four-fifths of the consumption in the European dock-yards.

PIN'EAL GLAND, in anatomy, a small heart-shaped substance, about the size of a pea, situated at the basis of the brain. It was anciently supposed to be the seat of the soul.

PI'NE-APPLE, in botany, the *Ananas*,



PINS FOR MOURNING ARE MADE OF IRON WIRE, RENDERED BLACK BY A VARNISH OF LINSEED OIL WITH LAMP-BLACK.

THERE IS SCARCELY ANY KIND OF MACHINERY MORE INGENIOUS THAN THAT FOR MAKING THE INCONSIDERABLE ARTICLE—A PIN.

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WOODEN PIPES FOR CONVEYING WATER THROUGH THE STREETS, ARE USUALLY BORED WITH LARGE IRON AUGERS OF DIFFERENT SIZES.

a species of *Bromelia*. It is an herbaceous plant, with leaves something similar to those of the aloe. The fruit resembles in shape the cone of the pine-tree, whence it has derived its name.——The place where pine-apples are raised is called a *pinery*.

PIN'ION, in mechanics, a spindle, in the body of which are several notches, which catch the teeth of a wheel that serves to turn it round: or it is the lesser wheel which plays in the teeth of a larger.——The joint of a bird's wing remotest from the body.——The nut or lesser wheel of a watch.

PIN'ITE, a mineral found in prismatic crystals of a greenish white-colour, brown, or deep red: it holds a middle place between steatite and mica.

PINK, in botany, a plant and flower of the genus *Dianthus*, common in our gardens, and of which more than 100 species are known. Their roots are annual and perennial; the stems herbaceous and jointed; the leaves opposite and entire; and the flowers terminal, aggregate, or solitary, but always elegant, and much esteemed for their rich spicy odour.——Also a colour used by painters: a faint shade of crimson.

PIN'NA, in ichthyology, a shell-fish which produces pearls of different colours; as gray or lead-coloured, red, and some of a blackish colour, and in the form of a pear.——*Pinna*, in botany, though it signifies literally a wing, is applied to plants to denote the leaflet of some compound leaves.

PIN'NACE, a small vessel navigated with oars and sails, and having generally two masts, which are rigged like those of a schooner; also one of the boats belonging to a man of war, usually with eight oars, and used to carry the officers to and from shore.

PIN'NACLE, in architecture, the top or roof of a building, terminating in a point. Among the ancients the pinnacle was appropriated to temples; their ordinary roofs being all flat. It was from the pinnacle that the *pediment* took its rise.

PIN'NATE, or PIN'NATED (*pinnata folia*), in botany, leaves formed in the manner of a wing, being composed of two large ranges or series of *foliola*, annexed to the two sides of one oblong petal. There are, however, several kinds; but by a *pinnate* leaf we generally understand a species of compound leaf wherein a simple petiole has several leaflets attached to each side of it.

PIN'NATIFID, in botany, an epithet for a kind of simple leaf, divided transversely by oblong horizontal segments or jags, not extending to the middle rib.

PIN'NATIPED, in ornithology, an epithet for birds whose toes are bordered by membranes.

PIN'NITE, fossil remains of the Pinna, a genus of shells.

PIN'NULATE, in botany, an epithet for a leaf in which each pinna is subdivided.

PI'NUS, in botany, the Pine-tree. Also the name of a genus of plants in the Linnæan system, class 21 *Monœcia*, order 8 *Monadelphia*.

PIONEE'R, in military tactics, a military labourer, or one whose business is to attend an army in its march, to clear the way, by cutting down trees and levelling roads; as also to work at intrenchments, or form mines for destroying an enemy's works.

PIP, a disease in young birds, particularly in that of domestic birds, which consists of a white skin or film near the tip of the tongue, and which, if not removed, proves fatal, as it hinders their feeding.

PIPE, a long tube or hollow body; applied to the veins and arteries of the body, and also to such other tubular bodies as are used for conductors of water or other fluids. The pipes by which water is conveyed beneath the ground are generally of a moderate size, and may be made from a great variety of materials, the main objects being that they should possess strength, tightness, and durability, and that the materials of which they are composed should not be capable of contaminating the water. *Iron pipes* are considered preferable to those of wood, being stronger, and in most situations more durable. They are made of cast iron, with a socket, or enlarged cavity at one end, into which the end of the next pipe is received. The joints thus formed are rendered tight, either by filling the interstices with lead, or by driving in a small quantity of hemp, and filling the remainder of the socket with iron cement, made of sulphur, muriate of ammonia, and chippings of iron. *Copper pipes* are extremely durable, and are made of sheet copper, with the edge turned up and soldered; but they require to be tinned inside on account of the poisonous character of the material. *Lead pipes* are much employed for small aqueducts, owing to the facility with which they can be soldered and bent in any direction; and they are supposed not to contaminate water, but they are not safe for pipes intended to convey acid liquors. *Stone pipes* preserve the water contained in them in a very pure state, but are generally very expensive on account of the labour of working them. *Earthen pipes* made of common pottery ware, and glazed on the inside, are also used, but they are more liable to be broken than most other kinds, and cannot therefore be relied on.——*Pipe*, in music, a wind instrument, smaller than a flute. The word is not now the proper technical name of any particular instrument, but is applicable to any tubular wind instrument.——*Pipe*, a wine measure, usually containing 105 imperial, or 126 wine gallons. But, in commerce, the size of the pipe varies according to the description of wine it contains. Thus, a pipe of port contains about 128 wine gallons; sherry, 130; Lisbon and Bucellas, 140; Madeira, 110; and Vidonia, 120.——*Pan-pipes* are a range of short pipes bound together side by side.——*Pipe*, in mining, is where the ore runs forward endwise in a hole, and does not sink downward or in a vein.——*Pipe-office*, in law, an office in which a person, called the clerk of the

WHENEVER A BEND IS NECESSARY IN A WATER-PIPE, IT SHOULD BE MADE IN AS GRADUAL A CURVE AS POSSIBLE.



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pipe, makes out leases of crown lands by warrant from the lord treasurer, the commissioners of the treasury, or the chancellor of the exchequer. He also makes out all accounts of the sheriffs, &c.

PI'PE-CLAY, a white argillaceous earth, found in great quantities at the isle of Purbeck in Dorsetshire, and at Teignmouth in Devonshire, in lumps, which are purified by dissolving in water. The clay, when prepared, is spread on a board and beaten with an iron bar to temper and mix it; it is then divided into pieces of a proper size to form a tobacco-pipe, which being formed in moulds and baked in a moderately heated furnace, become the clay pipe used in smoking.——In Germany there are a great variety of *smoking pipes*, of all shapes and sizes, with bowls of wood, meerschaum, porcelain, &c. A German pipe generally consists of four chief parts; the mouthpiece, the tube, the bowl, and a part which connects the two latter, and serves to collect the juice descending from the tobacco, and prevent it from getting into the tube. ——The Eastern *hookah* is a very curious instrument, the essential feature of which is, that the smoke passes through water, loses the particles which give it an unpleasant flavour, and becomes cool before it reaches the mouth.

PI'PE-FISH, in ichthyology, the *Syngnathus* of Linnæus; a fish so called from the length and slenderness of its body, which in its thickest part is only equal to a swan's quill.

PI'PER, in botany, the name of a genus of plants in the Linnæan system; class 2 *Diandria*, order 3 *Trigynia*. The species are perennials, and consist of the different kinds of pepper.

PIPE'RINE, a concretion of volcanic ashes. Also a peculiar crystaline substance extracted from black pepper. It has an extremely bitter and acrid taste, and is very slightly volatile.

PIPISTREL, in soology, a species of bat, the smallest of the kind.

PI'PPIN, the name given to several kinds of apples; as the golden pippin, the lemon pippin, the Kentish pippin, &c. *Pippins* take their name from the small spots or pips that usually appear on the sides of them.

PIQUET', a game at cards played between two persons, with only thirty-two cards; all the deuces, threes, fours, fives, and sixes being set aside.

PI'RACY, the crime of robbery or taking of property from others by open violence on the high seas, without authority. It includes all acts of robbery and depredation committed at sea, which, if occurring upon land, would amount to felony. The word *pirate* signifies literally an adventurer. Formerly the offence of piracy was only cognizable by the admiralty courts; but it being inconsistent with the liberties of the nation that any man's life should be taken away, unless by the judgment of his peers, an act was passed in the reign of Henry VIII. establishing a new jurisdiction for this purpose, which proceeds according to the course of common law. During the anarchy of the middle ages, when every baron considered himself a sort of independent prince, entitled to make war on others, piracy was universally practised; nor was the nuisance finally abated in Europe till the feudal system had been subverted, and the ascendancy of the law everywhere secured. In more modern times, some of the smaller West India islands have been the great resort of pirates: latterly, however, they have been mostly driven from their haunts in that quarter.

PIROUETTE', in dancing, a rapid circumvolution upon one foot, which on the stage is repeated by the dancers many times in succession.——In riding, it is the sudden short turn of a horse, so as to bring his head suddenly in the opposite direction to where it was before.

PIS'CARY, in our ancient statutes, the right or liberty of fishing in another man's waters.——We have several other words derived from the Latin *piscis*, a fish; as *piscatory* and *piscine*, for whatever relates to fishes or to fishing; *piscivorous*, feeding or subsisting on fishes; *piscation*, the act or practice of fishing.

PIS'CES, in natural history, is the fourth class in the Linnæan system. [See ICHTHYOLOGY.] This branch of natural history is much more imperfectly understood than the others, owing to the circumstance of the animals of which it treats inhabiting the watery element, with which we must necessarily be in a great measure unacquainted. The general form and structure of fishes is beautifully adapted to the peculiarity of their situation. Being nearly of the same specific gravity as the water which they inhabit, their small fins only are requisite to enable them to move with ease and steer their course at pleasure. The pectoral, and more particularly the ventral fins, serve to raise and depress the fish: when the fish desires to have a retrograde motion, a stroke forward with the pectoral fin effectually produces it: if the fish desire to turn either way, a single blow with the tail, the opposite way, sends it round at once; if the tail strike both ways in succession, the motion produced by the double lash is progressive, and enables the fish to dart forward with astonishing velocity. Fishes have the organs of sense, some of them probably in a very high degree, and others imperfectly: of the latter kind are the senses of touch and taste; the sense of hearing, the existence of which was formerly doubted, is now completely ascertained, and is found to be situated in the head. The organ of smelling is large, and the animals have a power of contracting and dilating the entry to it as they have occasion. By their acute smell they are supposed to discover their food. The sight of fishes is the most perfect of their senses, and is perhaps the only one that, from the peculiarity of their situation, they necessarily have occasion for. Fishes are mostly carnivorous, though they will seize



PIPE-CLAY AND FULLER'S-EARTH ARE USED FOR SCOURING CLOTH, IN CONSEQUENCE OF THEIR GREAT AFFINITY FOR GREASY SUBSTANCES.

THE TURKS MAKE USE OF PIPES THREE OR FOUR FEET LONG, MADE OF REEDS OR WOOD AND AN EARTHEN BOWL.

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upon almost anything that comes in their way, and not unfrequently devour their own offspring: they seem to manifest a predilection for whatever they can swallow possessed of life. Notwithstanding their natural voracity, fishes can live long apparently without food; and to account for this it has been supposed they feast on insects too small for the human eye to see, or that they have the power of chemically decomposing water.——*Pisces*, in astronomy, the twelfth sign or constellation in the zodiac. This sign is represented by two fishes tied together by the tails. They are fabled by the Greeks to have been the fishes into which Venus and Cupid were changed, in order to escape the giant Typhon; but according to the Egyptian mythology, the *Pisces* were hieroglyphic of the spring season when the fishing commences.

PIS'CIS VO'LANS, in astronomy, a small constellation of the southern hemisphere unknown to the ancients, and invisible to us in these northern regions.

PIS'OLITE, in mineralogy, a carbonate of lime, slightly coloured by the oxyde of iron. It is sometimes called *calcareous tufa*; and occurs in little globular concretions of the size of a pea or larger, which usually contain each a grain of sand as a nucleus.

PIS'OPHALT, or PEA-MINERAL; a soft bitumen, black and of a strong pungent smell. It holds a middle place between petroleum, which is liquid, and asphalt, which is dry and brittle.

PISSASPHAL'TUM, *Earth-pitch*, a fluid opaque mineral substance, of a thick consistence, a strong smell, readily inflammable, but leaving a residuum of greyish ashes after burning.

PISSELÆ'UM IN'DICUM, Barbadoes Tar, a mineral fluid of the nature of the thicker bitumens, and approaching nearer than any other, in appearance, colour and consistence to the true pissasphaltum, though differing from it in other respects. It is very frequent in many parts of America, where it is found trickling down the sides of mountains in large quantities, and sometimes floating on the surface of the waters.

PISTA'CHIA, or PISTA'CHIO NUT, in botany, the nut of the *Pistachia terebinthus*, or turpentine-tree, containing a kernel of a pale greenish colour, flavoured like an almond, and yielding a pleasant oil. It is wholesome and nutritive. The tree grows in Syria, Arabia, and Persia.

PISTAREEN', a silver coin of the value of ninepence.

PI'STIL, in botany, the pointal, an organ of female flowers for the reception of the pollen, supposed to be a continuation of the pith, and when perfect, consisting of the germ or ovary, the style, and the stigma. ——*Pistillaceous*, growing on the germ or seed-bud of a flower.——*Pistilliferous*, having a pistil without stamens; as, a female flower.

PIS'TOL, the smallest kind of fire-arms, and consequently the most portable. Pistols are of various lengths, and borne by horsemen in cases at the saddle bow; the management of them forms a part of the manual exercise of the cavalry.

PISTOLE, a Spanish gold coin, but current also in the neighbouring countries. It is worth from 17*s.* to 19*s.*

PIS'TON, a short cylinder of metal or other solid substance, fitted exactly to the cavity of the barrel of the pump, or other machine to which it is applied. There are two kinds of pistons used in pumps, the one with a valve, and the other without a valve, called a forcer.

PITCH, a thick, tenacious, oily substance, the residuum of inspissated tar, obtained by incision from pines and firs, and used to preserve wood from the effects of water and for other purposes. It abounds in hydrogen, and is, therefore, very combustible. The smoke of pitch condensed forms lamp-black.——*Pitch*, in architecture, the angle which the roof of a building is set to. Also the point where a declivity begins, or the declivity itself; as, the *pitch* of a hill.——*Pitch*, in music, the degree of elevation of the key-note of a tune. The instrument used for this is called a *pitch pipe*.——We read in Roman history, that *pitched shirts* were made use of by the Romans to punish incendiaries. The criminals were wrapped up in a garment daubed over with pitch and other combustibles, and then set on fire.

PITCH'ING, in sea language, the movement by which a ship plunges her head and afterpart alternately into the hollow of the sea. This motion may proceed from two causes; the waves which agitate the vessel; and the wind upon the sails, which makes her bend to every blast.

PITCH'STONE, in mineralogy, a subspecies of quartz, which in lustre and texture resembles pitch. It occurs in large beds, and sometimes forms whole mountains. Its colours are green and black; or brown, tinged with red, green, or yellow. It is also called *obsidian* and *resinite*.

PITH, the soft spungy substance in the centre of plants and trees. In animals, the spinal marrow.——The word *pith* is also used to express concentrated force, or closeness and vigour of thought and style. We say, the summary contains the *pith* of the original; in that speech the *pith* of the whole argument is condensed, &c.

PITU'ITARY GLAND, in anatomy, a small oval body on the lower side of the brain, supposed by the ancients to secrete the mucus of the nostrils.——*Pituitary membrane*, the mucous membrane that lines the nostrils and sinuses communicating with the nose.——*Pituitous*, consisting of or resembling mucus.

PITYRIA'SIS, in medicine, a scurfy disorder of the head and adjacent parts.

PIU', in music, Italian for *a little more*. It is prefixed to words to increase their force, as *piu allegro*, a little brisker; *piu piano*, a little softer, &c.

PIV'OT, in mechanics, a pin on which any thing turns. In the military art, the officer,



IN THE LINNEAN SYSTEM THE FINS OF FISHES ARE THE FOUNDATION OF THE FIRST FOUR ORDERS; THE OTHER TWO ARE NAKED FROM THE GILLS.

THE SOUTHERN COUNTRIES OF EUROPE, SOUTH AMERICA, MEXICO, AND THE SANDWICH ISLANDS, ARE RICH IN THE VARIETIES OF PITCHSTONE.

BOTH PLAGUE AND MALARIA HAVE THEIR ORIGIN IN PUTREFACTION, EMANATING AN INVISIBLE VAPOUR, ONLY KNOWN BY ITS CONSEQUENCES.

serjeant, corporal, or private, upon whom the different wheelings are made in military evolutions.

PLACA'RD, a printed or written paper posted in a public place, intended either to notify some public measure, or to censure public or private characters. It was originally the name of an edict, proclamation, or manifesto issued by authority; but in that sense the word is not now used.

PLACE, in physiology, that part of immovable space which a body occupies. It is either *absolute* or *relative*, the latter signifying that part of space which has relation to other objects. "Place is to space or expansion," says Mr. Locke, "as time is to duration. Our idea of place is nothing but the relative position of anything with reference to its distance from some fixed and certain points. Whence we say, that a thing has or has not changed place, when its distance either is or is not altered with respect to those bodies with which we have occasion to compare it."——In astronomy, the word *place* has various significations: the *physical place* is that in which the centre of a celestial body lies; the *optical place* is that point on the surface of the sphere where the spectator sees the centre of the star, &c. The *eccentric place* of a planet is that point of its orbit in which a planet would appear if seen from the sun. The *geocentric place*, that point of the ecliptic to which a planet, viewed from the earth, is referred.——*Place*, in geometry, any point in a certain bound or extent wherein a figure may serve for the solution of a problem.

PLACENTA, in botany, the part of a plant or fruit to which the seeds are attached. The disposition of the cotyledons, or lobes in the vegetation or germination of seeds, is termed *placentation*.

PLAGUE, a malignant and contagious disease that often prevails in Egypt, Syria, and Turkey. It generally proves fatal to nations and great cities, but is arrested by cleanliness, or the avoiding of putrid fermentations, of which it seems to be an extension. Dr. Madden, who paid great attention to the nature, causes, and effects of the plague, observes, in his Travels in Turkey, Egypt, &c., "I am thoroughly persuaded that the plague is both contagious and infectious; at one period epidemical, at another endemical; in plain English, that the miasma may be communicated by the touch or by the breath; that in one period it is confined to a particular district, and at another is disseminated among the people: but if plague have one form more decided than another, it is the endemic." He adds, "I have given the plague the name of *typhus gravissimus*. The symptoms, from the first, are general debility, congestion about the heart, not depending on inflammation, but on the putrescent state of the circulation. It differs little from putrid typhus, except in its duration and eruptions. In every stage of plague nature appears to lie prostrate under the influence of the poisonous miasma; and when the patient sinks at last, it is from the want of force in the constitution to drive out the eruptions on the surface."

PLAICE, in ichthyology, a fish of the genus *Pleuronectes*, flat and somewhat square in its form, and furnishing an article of wholesome food.

PLAINTIFF, in law, the person who commences a suit before a judicial tribunal, for the recovery of a claim; opposed to *defendant*.

PLAN, the representation of something drawn on a *plane*; as a map, chart, or ichnography. It is, however, more particularly used for a draught of a building, as it appears, or is intended to appear on the ground; showing the extent, division, and distribution of its area, or ground plot, into apartments, rooms, passages, &c.——A *geometrical plan* is one in which the solid and vacant parts are represented in their natural proportions. The *raised plan* of a building is otherwise called an *elevation* or *orthography*. A *perspective plan* is that which is exhibited according to the rules of perspective. [See PERSPECTIVE.]——The word *plan* also signifies a scheme or project; the form of something to be done existing in the mind, with the several parts adjusted in idea. A *plan*, in this sense, may be expressed in words or committed to writing; as a *plan* of a constitution of government, the *plan* of a military expedition, &c.

PLANE, in geometry, a plain surface, or one that lies evenly between its boundary lines; and as a right line is the shortest extension from one point to another, so a plane surface is the shortest extension from one line to another.——In astronomy, the term *plane* is used for an imaginary surface, supposed to pass through any of the curves described on the celestial sphere; as, the *plane* of the ecliptic; the *plane* of a planet's orbit, &c.——In joinery, &c. a *plane* is an instrument consisting of a smooth piece of wood, with an aperture, through which passes obliquely a sharp-edged tool, used in paring and smoothing wood; these are of various forms and sizes, adapted to the nature of the work.

PLAN'ET, a celestial body revolving round the sun as a centre, and continually changing its position with respect to the fixed stars; whence the name *planet*, which in the Greek signifies "wanderer." The planets are distinguished into primary and secondary. The *primary* planets are those which revolve round the sun as a centre; and the *secondary*, more usually called satellites or moons, those which revolve about a primary planet as a centre, and constantly attend it round the sun. The primary planets are Mercury, Venus, the Earth, Mars, Jupiter, Saturn, and Herschel or the Georgium Sidus. Four smaller planets, sometimes called *asteroids*, namely, Ceres, Pallas, Juno, and Vesta, have recently been discovered between the orbits of Mars and Jupiter. Saturn, Jupiter, Mars, and Herschel, being without the earth's orbit, are sometimes called the *superior* planets; Venus and Mercury, being within the earth's

PLAGUE IS BELIEVED TO ORIGINATE IN THE PUTREFACTION OF ANIMAL MATTER; MALARIA, IN THE DECOMPOSITION OF VEGETABLE MATTER.



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HOMER AND HESIOD CONSIDERED THE MORNING AND EVENING STARS AS TWO DIFFERENT BODIES; PYTHAGORAS DISCOVERED THEIR IDENTITY.

orbit, are called *inferior* planets. The planets are opaque bodies, which receive their light from the sun; and they are distinguished from the *fixed* stars, not only by their motion or revolution, but by their not twinkling. The elements of a planet are, 1. its mean distance; 2. its sidereal period; 3. eccentricity; 4. its inclination; 5. place of node; 6. longitude; and 7. its own longitude at a fixed time.——*Motion of the planets.* The primary planets all bend their course about the centre of the sun, and are accelerated in their motions as they approach to him, and retarded as they recede from him; so that a ray, drawn from any one of them to the sun, always describes equal spaces or areas in equal times: whence it follows, that the power which bends their way into a curve line, must be directed to the sun. This power is no other than that of gravitation, which increases according as the square of the planet's distance from the sun decreases. The universality of this law still farther appears by comparing the motions of the different planets: for the power which acts on a planet near the sun is manifestly greater than that which acts on a planet more remote; both because it moves with greater velocity, and because it moves in a less orbit, which has more curvature, and separates farther from its tangent, in arcs of the same length, than in a greater orbit. To convey some idea of the space occupied by the planetary system, if, indeed, the idea of space so vast be capable of comprehension sufficiently clear to have its due effect on the mind, it may be observed that the sun, which occupies so small a portion of that space, is a million times larger than the earth. Huygens, one of the most expert astronomers of the last century, calculated the time in which a cannon-ball would run over the space between the earth and the sun, and between the sun and the upper planets, and thence to the fixed stars; and offers experiments to prove that it runs the first hundred fathoms in a second. Continuing to move with the same velocity, it will traverse three leagues in a minute, one hundred and eighty in an hour, and four thousand three hundred and twenty in a day; and therefore, judging upon astronomical principles of the several distances required, and dividing them by the space so over run in a given time, this philosopher concludes that the ball must take up twenty-five years in passing from the sun to the earth; one hundred and twenty-five in passing from the sun to Jupiter; and two hundred and fifty in reaching Saturn. But, how astonishing soever these distances may be, they are trivial compared with that of the fixed stars. Those bodies, which appear only as points in the firmament, and of which millions escape our sight, are considered the centres of systems—suns, round which planets revolve. What then must be their distance, since all this multitude of suns shed so small a portion of light on the planet to which we belong?

PLANETA'RIUM, an astronomical machine, made to represent the motions of the heavens. [See ORRERY.]

PLANE-TREE, in botany, a tree of the genus *Platanus*. The oriental plane-tree, a native of Asia, rises with a straight, smooth, branching stem, to a great height, with palmated leaves and long pendulous peduncles, sustaining several heads of small flowers. The seeds are downy, and collected into round, rough, hard balls. There is also a downy pubescence which coats the young leaves and branches of plane-trees. This down is formed of delicate branched spiculæ, which, like the elementary organs composing the epidermis and other parts of many plants, consist mainly of silica, and may, consequently, be likened to extremely minute glass needles. In the spring of the year, more especially, this down readily falls off, and being wafted about by the air, is rendered noxious to gardeners who may chance to be working in the neighbourhood of these trees; for entering at the mouth and nostrils, these spiculæ insinuate themselves into the more delicate parts about the base of the respiratory organs, and produce considerable irritation and inflammation. ——The occidental plane tree, which grows to a great height, is a native of North America; where it is also called *button-wood*.

PLANIFO'LIOUS, in botany, an epithet for a flower made up of plain leaves or petals, set together in circular rows round the centre. The word *planipetalous* is also used for the same.

PLANIM'ETRY, the mensuration of plain surfaces, or that part of geometry which regards lines and plain figures, without considering their height or depth.

PLAN'ISPHERE, a sphere and its various circles projected on a plane, such as maps, &c.; but more particularly, a projection of the celestial sphere upon a plane, representing the stars, constellations, &c.

PLA'NO, a prefix to several words; as *plano-conical*, plain or flat on one side and conical on the other; *plano convex*, flat on one side and convex on the other; *plano-horizontal*, having a level horizontal surface or position; *plano-subulate*, smooth and awl-shaped.

PLANT, in physiology, a general name for every kind of vegetable, though in popular language the word is generally applied to the smaller species of vegetables. A plant is an organic body, destitute of sense and the power of locomotion, adhering to another body in such a manner as to draw from it its nourishment, and capable of reproducing its kind, "whose seed is in itself." *Gen.* i.——The root, or part whereby plants are connected to their matrix, and by which they receive their nutritious juice, consists of an infinite number of absorbent vessels, which being dispersed through the interstices of the earth, attract or imbibe its juices; consequently, every thing in the earth that is dissoluble in water, is liable to be imbibed. The motion of these nutritious juices is not unlike that of the blood in animals, being effected by the action of

SOILS AFFORD DIFFERENT DEGREES OF WARMTH TO PLANTS, ACCORDING AS THEY HAVE THE POWER OF ACCUMULATING AND RETAINING HEAT.



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AS A QUANTITY OF CARBONIC ACID IS EVOLVED FROM FLOWERS AND PLANTS, WHICH GREATLY INJURE THE PURITY OF THE AIR IN A BEDROOM.

the air. Though formerly unknown, it is now clearly ascertained that plants consist of two series or orders of vessels: 1. such as receive and distribute the alimentary juices, answering to the arteries, lacteals, veins, &c. of animals; and 2. the tracheæ, or air-vessels, which are long hollow pipes, wherein air is received and expelled. It accordingly follows, that the heat of the sun must have a strong effect on the air included in these tracheæ; whence arises a perpetual spring of action to promote the circulation of the juices in plants. [For the botanical distribution of plants into classes, genera, &c., see BOTANY.]——*Plants used in food and medicine:* Notwithstanding accident first directed attention to the cultivation of culinary vegetables, very few of these are now found in a natural state, and they are then so modified as to escape the notice of any except expert botanists. And it may almost be taken as a general rule, that in proportion as cultivation improves the nutrition of the plant for food, so does it deteriorate in its medicinal qualities. It is also remarkable that a very large proportion of plants employed as food are not now known in a wild state, particularly the different varieties of corn which have followed man in his emigrations, and are only met with under the hands of the cultivator.——*Spontaneous Plants:*—Few things are more extraordinary than the unusual appearance and development of certain plants in certain circumstances. Thus, after the great fire of London in 1666, the entire surface of the destroyed city was covered with so vast a profusion of a species of a cruciferous plant, the *Sisymbrium irio* of Linnæus, that it was calculated that the whole of the rest of Europe did not contain so many plants of it. It is also known that if a spring of salt water makes its appearance in a spot, even a great distance from the sea, the neighbourhood is soon covered with plants peculiar to a maritime locality, which plants, previous to this occurrence, were entire strangers to the country. Again, when a lake happens to dry up, the surface is immediately usurped by a vegetation which is entirely peculiar, and quite different from that which flourished on its former banks.——*Skeletons of the Leaves, Calyxes, &c. of Plants, may be produced by the following method:*—Procure an open-topped earthen pan, holding a gallon or more, and put into it a quantity of leaves, seed-vessels, &c.; and pour upon them a sufficiency of *boiling* soft water to cover them. This done, place the pan upon the tiles of the roof of the house, or in any other place exposed to the warmth of a summer's sun and the vicissitudes of the weather. Stir the leaves occasionally (say, once or twice a week) and carefully, but never change the water. The putrefactive fermentation will now soon ensue; and, in about six weeks or two months, according to the nature of the subjects, many of the specimens will be completely macerated; and will require no other attention than holding them singly under the tap of the water-tub, or some other small forcing stream of water, which will wash away all the other skin and green fleshy matter. If this matter does not come off readily when assisted a little with the thumb and finger, or a small knife, the leaves must be soaked for a longer time. Those of the leaves which seem liable to break during the washing of them may be preserved from breaking by placing them upon a little piece of board, and holding them by the thumb and finger; and, should a little of the green fleshy matter remain fixed between the interstices of the skeleton leaf, it may easily be removed by striking the leaf *perpendicularly* with a clothes brush. They will now only require bleaching; this may be done very effectually, by placing them in a bandbox, with a little sulphur burning in a small vessel beside or under them. The most sure way, however, of bleaching objects of this nature is, to immerse them, for a few minutes, in dilute chloride of lime, or chloride of soda.

PLANTER, in botany, the name of the last of the seven families into which Linnæus has distributed the whole vegetable kingdom; comprehending all those which are not funguses, algæ, mosses, ferns, grasses, or palms, and is divided into *herbaceous plants, shrubs,* and *trees.*

PLANTA'GO, in botany, a genus of plants in the Linnæan system; class 4 *Tetrandria,* order 1 *Monogynia.*

PLANTAIN-TREE, in botany, a tree of the genus *musa,* the most remarkable species of which are, the *paradisiaca* or plantain, and the *sapientum* or banana-tree. The plantain rises with a soft stem fifteen or twenty feet high, and the fruit is a substitute for bread. It is one of the most useful plants in the vegetable creation, and as some of the trees are in bearing most of the year, they form the entire sustenance of many of the inhabitants of the tropical climates.

PLANTA'TION, in the West Indies, and also in the United States of America, an estate or tract of land occupied and tilled, either for the culture of the sugar cane, or for tobacco, rice, indigo, and cotton, as the case may be.——In politics, a colony or settlement of people in a foreign country.——In horticulture, any place which is planted with shrubs and trees.

PLANT-CANE, in the West Indies, sugar canes of the first growth, in distinction from the ratoons, or sprouts from the roots of canes which have been cut.

PLANT'ER, a proprietor and cultivator of ground in the West Indies and southern states of America.

PLASH, the branch of a tree partly cut or lopped and bound to other branches.——*Plashing,* bending the boughs of hedges and interweaving them, so as to thicken them.

PLASTER, in medicine, an external application to the body, spread on linen or leather.——*Plaster,* in masonry, a composition of lime, water, and sand, well mixed into a kind of paste and used for coating walls and partitions of houses, which when dry becomes hard, but still retains the name of plaster.——*Plaster of Paris,* a prepara-

PLANTS REQUIRE FRESH AND CONSTANT SUPPLIES OF OXYGEN; THE ATMOSPHERE OF A CLOSE ROOM IS THEREFORE PREJUDICIAL TO THEM.



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PLATED GOODS SHOULD BE KEPT DRY, THE COATING OF SILVER ON THEM BEING SO THIN AS TO BECOME SOON CANKERED BY DAMP.

tion of several species of gypsum dug near Montmartre, a village in the neighbourhood of Paris, from which city it takes its name. The use of this substance, in imitating works of sculpture, is well known.——In popular language, this name is applied improperly to plaster-stone or to any species of gypsum.

PLASTIC ART, a branch of sculpture, being the art of forming figures of men and animals in plaster, clay, &c.——The word *plastic* signifies having power to give form or fashion to a mass of matter; as, the *plastic* hand of the Creator, &c.

PLATE, vessels or utensils of gold or silver; from the Spanish word *plata*, signifying "silver;" but which application of the word seems itself to be derived from the practice of forming silver into flat or shallow articles for the table; though any silver vessel or wrought ornament in silver is denominated *plate*.——*Plate armour*, that kind which is composed of broad pieces, and thus distinguished from *mail* armour.

PLAT'FORM, in architecture, a row of beams which support the timber-work of a roof; also any erection consisting of boards raised above the ground for an exhibition or any other temporary purpose.——*Platform*, in the military art, an elevation of earth on which cannon are mounted to fire on an enemy.——*Platform*, in a ship of war, a place on the lower deck; the orlop.——*Plats of a ship*, flat ropes made of rope yarn, and weaved one over the other; they serve to save the cable from galling in the hawse, or to wind about the flukes of the anchors to save the pennant of the fore-sheet from rubbing them.

PLATIC ASPECT, in astrology, a ray cast from one planet to another, not exactly, but within the orb of its own light.

PLATING, the art or operation of covering baser metals with a thin plate of silver; constituting what is termed *plated goods*, or the *plated manufacture*. It is said to have been invented by a spur-maker, not for show, but a purpose of real utility. The more elegant spurs were used to be made of solid silver, and from the flexibility of that metal they were liable to be bent by the slightest accident. To remedy this defect, the workman alluded to, who resided at Birmingham, contrived to make a pair of spurs hollow, and to fill the space with a slender rod of steel or iron. Finding this a great improvement, and being desirous to add cheapness to utility, he contrived to make the hollow larger, and of course the iron thicker, till at length he discovered the means of coating an iron spur with silver, in such a manner as to make it equally elegant with those which were made wholly of that metal. The invention was quickly applied to other purposes; and numberless vessels have now the strength and cheapness of copper or iron, with the appearance of silver.——The old method of *plating* was by dissolving mercury in nitrous acid, dipping the copper, and depending on the affinity of the metals, by which a very slight article was produced. But at Sheffield and Birmingham, all plate is now produced by rolling ingots of copper and silver together. About the eighth of an inch in thickness of silver is united by heat to an inch of copper in ingots about the size of a brick. It is then flattened by steel rollers worked by an eighty-horse power engine. The greater malleability of the silver occasions it to spread equally with the copper into a sheet of any required thickness, according to the nature of the article for which it is wanted. Plated metal, the eighth of an inch thick, is thus rolled by the hand into ten times the surface, the silver spreading equally; and the plating would be perfect if the rolling had reduced it to the thinness of silver paper! This mode of plating secures to modern plate a durability not possessed by any plate silvered by immersion. Hence plated goods are now in universal request, and, if fairly used, are nearly as durable as silver itself; particularly since the introduction of silver edges instead of plated ones, which must be considered the greatest improvement that has taken place in this branch of manufacture.

PLATI'NUM, or PLATI'NA, a metal found in the mines of Peru, and unknown in England before the year 1741. In beauty, scarcity, ductility, and indestructibility, it is considered as not inferior to gold and silver, and in other qualities far their superior. When pure, it is of a grayish-white colour, like silver, or more like polished steel. It is harder than iron, undergoes no alteration from the action of air, and resists the action of acids and alkalies. Its ore contains palladium, iridium, osmium, and rhodium, besides iron and chromium. It is melted with difficulty, but drawn into very fine wire.

PLATON'IC, pertaining to Plato, his school, philosophy, opinions, &c. Thus *Platonic love* denotes a pure spiritual affection, for which Plato was a great advocate, subsisting between the different sexes, unmixed with carnal affections, and regarding no other object but the mind and its excellencies. It is also sometimes understood as a sincere disinterested friendship subsisting between persons of the same sex, abstracted from any selfish views, and regarding no other object than the individual so esteemed.——*Platonic year*, or the *great year*, a period of time determined by the revolution of the equinoxes, or the space of time in which the stars and constellations return to their former places in respect to the equinoxes. This revolution, which is calculated by the precession of the equinoxes, is accomplished in about 25,000 years. [See PHILOSOPHY.]

PLATONIST, one that adheres to the philosophy of Plato.

PLATOON', in the military art, a small square body of forty or fifty musketeers, drawn out of a battalion of foot, and placed between the squadrons of horse to sustain them; or a small body acting together, but separate from the main body; as, to fire by *platoons*.

PLATYPUS, in zoology, a quadruped in

PLATE-POWDER CONTAINING QUICKSILVER SOON TARNISHES, AND RENDERS THE PLATE SO BRITTLE AS TO BREAK WHEN LET FALL.



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New Holland, whose jaws are elongated into the shape of a duck's bill. The body is covered with thick hair, and the feet are webbed.

PLATYSMA, in anatomy, a thin muscle on the side of the neck that assists in drawing the skin of the cheek downwards.

PLAY. [See DRAMA.]

PLEA, in law, that which is alleged by a party for himself in court, in a cause there depending; but in a more limited sense, the defendant's answer to the plaintiff's declaration and demand. That which the plaintiff alleges in his declaration is answered and repelled, or justified by the defendant's *plea*. Pleas are usually divided into those of the crown and common pleas. Pleas of the crown are all suits in the king's [queen's] name, or in the name of the attorney-general on his [her] behalf. Common pleas are such suits as are carried on between subjects in civil cases.

PLE'ADING, in law, a speech delivered at the bar in defence of a cause: but, in a stricter sense, *pleadings* are all the allegations of the parties to a suit, made after the declaration, till the issue is joined. In this sense they express whatever is contained in the bar, replication, rejoinder, &c. till the question is brought to issue, that is, to rest on a single point.——*Pleading*, amongst the Greeks and Romans, was limited as to its duration, by a *clepsydra* or hour-glass of water; and to see that the orators had justice done them, in this respect, an officer was appointed to distribute the proper quantity of water to each.

PLEASURE, the gratification of the senses or of the mind; agreeable excitements in a state of health, contentment, and self-satisfaction, not of those kinds which produce exhaustion and disease, but of which the stock is inexhaustible, as those of the mind, of friendship, benevolence, doing good to others. Pleasure and pain seem to be the means made use of by nature to direct us in the pursuit of happiness; since pleasure is annexed to whatever contributes thereto, and pain is the companion of what tends to our ruin. Hence it is, that the pleasures of a child, a youth, a grown person, and an old man all vary, according to the different things required by nature in each state, whether simply for the preservation of the individual, or for that and propagation jointly.

PLEBEIAN, one of the common people, or a person in the lower ranks of society. Amongst the Romans, that part of the populace which was distinguished from the senatorian and equestrian order. The plebeians at first were employed in cultivating the lands, and the exercise of trades and mechanical professions; but in time they broke through this illiberal restraint, and claimed a participation with the other orders in places of trust, dignity, and emolument. The power of the plebians, from the first appointment of tribunes, in the year of the city 260, gradually increased, till it became an overmatch for that of the senate.

PLEDGE, something left in pawn; that which is deposited with another as security for the repayment of money borrowed, or for the performance of some agreement or obligation.——In law, bail; surety given for the prosecution of a suit, or for the appearance of a defendant, or for restoring goods taken in distress and replevied.——*To pledge*, in drinking, is to warrant a person that he shall receive no harm while drinking, or from the draught; a practice which originated with our ancestors in their rude state, and which was intended to assure the person that he would not be stabbed while drinking, or poisoned by the liquor. Notwithstanding the reason has long since ceased, the custom still continues—a remarkable instance of the force of habit.

PLEDG'ET, in surgery, a small flat tent of lint, laid over a wound to imbibe the matter discharged and keep the wound clean.

PLE'IADS, or PLE'IADES, in astronomy, a cluster or assemblage of seven stars in the constellation Taurus. They were called by the Latins *vergiliæ*, from *ver*, spring, because of their rising about the vernal equinox.

PLENIPOTEN'TIARY, a person invested with full power to transact any business; generally, an ambassador from a prince, invested with full power to negotiate a treaty or conclude peace with another prince or state.

PLE'NUM, in physics, a term denoting that every part of space or extension is full of matter, as is maintained by the Cartesians. Those philosophers who do not admit the idea of a vacuum are called *plenists*.

PLE'ONASM, in rhetoric, a form of expression in which more words are used than are necessary; a redundancy of words, used, though improperly, in order to express a thought with the greater energy or perspicuity; such as, "I saw it with my own eyes."

PLE'ONASTE, in mineralogy, a variety of the spinelle ruby; so called from its four facets, sometimes found on each solid angle of the octahedron.

PLETH'ORA, in medicine, excess of blood, or the state of the vessels of the human body when they are too full or overloaded with fluids.

PLETH'RON, or PLETH'RUM, in Grecian antiquity, a square measure, the exact contents of which are not certainly known. Some suppose it to correspond with the Roman *juger*, or 240 feet; others say it was the square of a hundred cubits.

PLEU'RA, in anatomy, a double membrane which covers all the internal cavity of the thorax.

PLEURI'TIS, or PLEU'RISY, in medicine, an inflammation of the *pleura* or membrane that covers the inside of the thorax. It is accompanied with fever, pain, difficult respiration and cough.

PLEURONEC'TES, in ichthyology, a genus of fishes of the *Thoracic* order; comprehending those that are commonly known by the name of flat-fish. They swim constantly obliquely, dwell at the bottom of the water, because they have no air-bladder,



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and frequently bury themselves in the sand. The plaice, flounder, sole, turbot, and dab, are the principal species.

PLEURO-PNEUMO'NIA, in medicine, a mixture of pleurisy and peripneumony.

PLEURORTHOPNÆ'A, in medicine, a kind of pleurisy, or disease in the side, in which the patient cannot breathe unless he keeps his body in an upright posture.

PLEX'US, in anatomy, any union of vessels, nerves, or fibres, in the form of network.

PLI'CA POLONI'CA, a disease of the hair, peculiar to Poland and the neighbouring countries. In this disease the hair of the head is matted or clotted by means of an acrid humour which exudes from the hair.

PLINTH, in architecture, a flat square member in the form of a brick. It is used as the foundation of columns, being the flat square table under the moulding of the base and pedestal at the bottom of the order.——*Plinth of a wall*, two or three rows of bricks advanced from the wall in form of a platband; and in general, any flat high moulding that serves in a front wall to mark the floors, &c.

PLOT, any stratagem or plan of a complicated nature, adapted to the accomplishment of some mischievous purpose; as a *plot* against the government, or against the life of a sovereign.——*Plot*, in dramatic writings, the fable of a tragedy or comedy, but more particularly the knot or intrigue, comprising a complication of incidents which are ultimately unfolded.——*Plot*, in surveying, the plan or draught of any field, farm, &c. surveyed with an instrument, and laid down in the proper figure and dimensions.

PLOUGH, in agriculture, an important implement for turning over the exhausted soil and turning up the fresh and fertile parts, so contrived as to save the labour of digging. They are of various constructions, according to the soil, and are generally drawn by horses, though in some places by oxen.——*Steam-ploughs*. Certain operations of the farm, such as thrashing, chaff-cutting, &c., which could be performed by fixed power, have partially occupied the attention of mechanics, and suitable machinery driven by water, wind, or small steam-engines, has to some extent been advantageously used for such purposes. But the idea of a farm to be altogether cultivated by steam, in lieu of animal power, has hitherto been treated as visionary and absurd, except by a few individuals, and one or two agricultural societies, who have enforced, in their publications, the practicability and importance of applying steam to effect the more laborious operations of agriculture. It appears, however, that Mr. Heathcoat, the ingenious and well known inventor of the lace machinery, has the merit of having conceived and planned this additional and remarkable contribution to science. The invention, after years of costly experiment, has been matured and perfected through the enterprising liberality of Mr. Heathcoat, assisted by the mechanical ingenuity and perseverance of Mr. Josiah Parkes, civil engineer, whom he selected to carry his designs into effect. The first machine has been constructed expressly for the cultivation of bogs, and has been practically and successfully worked in Lancashire, on Red Moss, near Bolton-le-Moors. At a late experimental trial of the steam-ploughs, as the public prints inform us, "two ploughs of different construction were put in action, to the admiration of the spectators; particularly the one last invented, which is double-acting, or made with two shares in the same plane, so that it returns at the end of a 'bout,' taking a new furrow without loss of time. The perfect mechanism of this plough—the action of the working coulters and under-cutting knives, which divide every opposing fibre of the moss—the breadth and depth of the furrow turned over—the application of a new and admirable means of traction, instead of chains or ropes—together with the facility with which the machine is managed, and the power applied to the plough, especially interested and surprised all present. The speed at which the plough travelled was 2½ miles per hour, turning furrows 18 inches broad by 9 inches in depth, and completely reversing the surface. Each furrow of 220 yards in length was performed in somewhat less than three minutes, so that in a working day of twelve hours, this single machine would with two ploughs turn over ten acres of bog land! The machine which bears the steam-engines is itself locomotive; but as the ploughs are moved at right angles to its line of progress, not dragged after it, the machine has to advance only the width of a furrow, viz. eighteen inches, whilst the ploughs have travelled a quarter of a mile; in other words, the machine has to be moved only eleven yards, in the time that the ploughs have travelled five-and-a half miles, and turned over a statute acre of land. This is, in truth, the prime distinguishing feature of the invention; and which seems to be essential to the economical application of steam to husbandry; for it is evident, that were it requisite to impel the machine with a velocity equal to that of the ploughs, by dragging them with it, a great proportion of the power of the engines would be uselessly expended."——That this is no idle theory may be further learned from the fact of its being in contemplation to use steam-ploughs in some of our colonies; as the following account, copied from a Glasgow paper, shows: "Lately a trial was made in one of the fields on the estate of Possil, near Glasgow, of the steam-plough, intended for the cultivation of the sugar lands of British Guiana. This trial was completely successful, and gave great satisfaction to the numerous party who witnessed it. The field was laid out similar to those in the colony, which have canals on each side running parallel with one another. The machinery consists of two iron boats, one containing a small high pressure steam-

THE CHIEF DIFFICULTY IN THE CONSTRUCTION OF A PLOUGH IS THAT OF ADAPTING IT TO ALL SOILS, ALL SEASONS, AND ALL DEPTHS.

LORD SOMERVILLE'S SINGLE PLOUGH IS CONSIDERED AN EXCELLENT ONE FOR THE PURPOSE OF BREAKING UP DEEP STIFF SOILS.



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THE BEST DRILL MACHINES ARE FRENCH'S FOR TURNIPS, COOKE'S FOR CORN, AND THE DRILL ATTACHED TO A PLOUGH FOR BEANS.

COOKE'S IMPROVED DRILL AND HORSE-HOE ARE IN GENERAL USE IN NORFOLK, SUFFOLK, AND VARIOUS OTHER PARTS OF ENGLAND.

engine, with a drum, round which the endless chain or rope is coiled, and the other a reversing pulley, by means of which the chain or rope is extended, and allowed to work whichever way is required; the ploughs are attached to this chain, and made to work backwards and forwards with great rapidity and accuracy. Mr. M'Rae, whose long residence in the colony, and great practical experience of the working of sugar estates, has directed his attention, for a considerable time past, to the great and absolute necessity of employing some other power to supersede cultivation by manual labour, invented the steam-plough, which was executed by Messrs. Edington and Sons, Phœnix Iron-works."

Although we have occupied so much of our space in the foregoing accounts of the *steam-plough*, we cannot yet dismiss the subject; for at the very moment we are putting this sheet to press, our attention is arrested by an article in the "Literary Gazette" (Aug. 29, 1840) on what is termed the "*New Agrarian System*." It is the invention of Mr. Pinkus, and applies to the entire agriculture and cultivation of the earth by means of steam power! The editor thus proceeds:—"At the Colosseum, in the Regent's Park, we attended and witnessed the working of a model of certain machinery, by means of which this extraordinary revolution is proposed to be brought about. It consists of a stationary steam-engine, which communicates by pipes laid a few inches under ground, and branching in all the necessary directions, with the machine for performing every kind of husbandry and agricultural labour,—ploughing, harrowing, sowing, reaping, draining, levelling, cutting down wood, &c. &c. Mr. Pinkus states his decided opinion that locomotive power, similar to that employed on railroads, can never be effectively used for agricultural purposes; and goes on to say that he has invented and adopted 'the only feasible means of using steam power in the cultivation of the soil, the easy practicability of which no one conversant with practical science can hesitate to assent to; they admit of the use of stationary steam power, or water power; no other methods of application can be so efficient or economical. By these improved methods, detailed in the enrolled specifications of the several patents, distant fields, comprising many square miles, near to or surrounding a station, are combined with it through the medium of pipes laid under ground, leading from the station and passing into the fields, in such proportion as that in every square mile there shall be a half-mile in length of mains or pipes; through these the power of the stationary engine is transmitted into the fields by an auxiliary vacuum power, which the mechanical combinations of this invention admit of being taken up in any parts of such fields to put in motion a locomotive engine of light weight by vacuum power, which engine has neither boiler nor furnace. To this engine various agricultural implements are from time to time appended, that perform all the operations herein enumerated. Thus one of the most effective philosophical principles in nature is made available, through the agency of fixed engines, to the purposes of agriculture.' The engine alluded to is propelled by a hollow, flexible tube, working round a roller parallel to the axle, and which, by a slight check, may be reversed at pleasure, so as to operate backwards and forwards, and in any direction. The ploughshares, harrows, hoes, scythes, or whatever is wanted, are readily fixed to this movement, and do the business of many horses and many persons. Mr. P. goes on to observe:—'The power of stationary engines being unlimited, the efficiency of the locomotive impelling machine can be varied from time to time, to suit the exigencies of field labour. Stationary engines, whether for steam or water, yield power in the cheapest form. It is, in fact, a well-understood principle in physics, that whatever moving force be expended in producing the rarefaction of air in—say, in an extended main hermetically sealed—must necessarily be followed by a corresponding force at a given distance from the prime mover or generator of force when taken up from the main, and made to act on pistons moving air-tight in cylinders, and exposed to the free action of incumbent atmospheric pressure. The whole power of the stationary engine is transmitted and taken up in a given time without any loss in the transmission. The only mechanical parts of the locomotive here used are those which, in similar machines, sustain but little wear and tear, or mechanical disarrangements. By it spade labour may be applied so rapidly and cheaply as to dispense with the use of the ploughshare altogether, thus deriving the well-known benefit of spade labour in thoroughly pulverising and tilling the soil. For opening trenches in the stiffest soils its power is efficient; in bog or marshy lands it is equally so; and for making tiles to effect drainage, or for mixing and spreading soils, it is the moving power. Not only in Great Britain and Ireland may the value of landed property be greatly enhanced by the application of this invention, but, in those colonies where the value of an estate is estimated not so much by the number of acres as by the amount of labour which is brought to bear on lands, it will increase their value in a fourfold proportion; and a not less important object may, by its introduction, be attained in those colonies where slave labour is mainly depended upon. So effectually will it compete with such labour, and so reduce its value, that, it is hoped, it will be found to be one of the most effectual means of any yet suggested, of conducing to the annihilation of that iniquitous system—slave traffic.' For the present (says the Editor) we must content ourselves with this announciation; for it would lead us to a very prolonged discussion to touch on the mighty changes which the adoption of such a mode of raising produce must cause. The land of Britain, estimated at 3,000,000,000 acres, of which



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40,000,000, capable of feeding 20,000,000 of people, are as yet uncultivated, offers an immensity for experiment. A million of horses might be dispensed with; the cost of which would be a saving of 30,000,000*l.* per annum. In the meantime this steam power, which has done so much for our manufactories (though applied to a total value of only 350,000,000*l.*), has never been made to serve the infinitely more important uses of agriculture. What may come of it as yet we cannot foresee; but if the plan can be carried into effect on a large scale, it must be prodigious—incalculable!"

PLO'VER, (*pluvialis*), in ornithology, the name of several species of birds of the genus *Charadrius*; as the green plover, about the size of the common lapwing; and the grey plover, with a black beak and green legs, a very beautiful bird.

PLUM (*prunus*), in botany, a genus of fruit trees, of which there are numerous varieties, differing in colour, taste, size, and form; but the most esteemed of all is the green-gage, or *reine Claude*.

PLUMB, PLUMB'-LINE, or PLUM'-MET, a leaden weight attached to a string, by which depths are sounded perpendicularly, and perpendiculars are taken by carpenters, masons, &c. Sometimes the string descends along a wooden ruler, &c. raised perpendicularly on another; in which case it becomes a level.

PLUMBA'GO, GRAPHITE, or BLACK-LEAD, a mineral consisting of carbon and iron, much used in drawing, and for making pencils. [See BLACK-LEAD.]——*Plumbago*, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are perennials.

PLUMBA'TA, in antiquity, a scourge used by the Romans, which was so called because it was armed with lead.

PLUM'BI SUBCARBO'NAS, in chemistry, subcarbonate of lead, commonly called ceruse or white lead.

PLUM'BI SUPERACETAS, in chemistry, formerly called sugar of lead from its sweet taste. It possesses sedative and astringent qualities in a very high degree, but is not altogether harmless.

PLUM'BUM, Lead. [See LEAD.]

PLUME, or PLU'MULE, in botany, the ascending scaly part of the corculum or heart of a seed, which rises and becomes the stem or body. It extends itself into the cavity of the lobes, and is terminated by a small branch resembling a feather, from which it derives its name.——*Plume*, a set of feathers for ornament, particularly ostrich feathers.

PLUME-AL'UM, in mineralogy, a kind of asbestos.

PLUMIPED, in ornithology, a fowl that has feathers on its feet.

PLUM'MING, among miners, the operation of finding by means of a mine dial the place where to sink an air shaft, or to bring an adit to the work, or to find which way the lode inclines.

PLU'MOSE, something formed in the manner of feathers, with a stem and fibres issuing from it on each side; as the antennæ of certain moths, butterflies, &c.—— In botany, a *plumose bristle* is one that has hairs growing on the sides of the main bristle. *Plumose pappus*, or down, is a flying crown to some seeds, composed of feathery hairs.

PLU'RAL, in grammar, an epithet applied to that number of nouns and verbs which is used when we speak of more than one; or that which expresses a plurality or number of things.

PLURAL'ITY, a number consisting of two or more of the same kind; as a *plurality* of worlds, &c.——*Plurality of benefices*, or *livings*, is where the same clergyman holds two or more spiritual preferments, with cure of souls. In a plurality of livings, the first, *ipso facto*, becomes void; on which account, the patron may present to it, provided the clerk be not qualified by dispensation, &c. to hold more livings than one, the law strictly enjoining residence.

PLUS, in algebra, a character marked thus +, used as the sign of addition.

PLUSH, a kind of shaggy cloth, with a velvet nap on one side, composed regularly of a woof of a single woollen thread and a double warp, the one wool of two threads twisted, the other of goats' or camels' hair. There are also some plushes made entirely of worsted, and others wholly of hair.

PLUTON'IC, or PLUTO'NIAN, pertaining to or designating the theory of the formation of rocks and mountains from fire. The *Plutonists* say that the formation of the world in its present state is to be ascribed to igneous fusion, in opposition to the *Neptunists*, who maintain that it has a watery origin. [See GEOLOGY, &c.]

PLUVIAM'ETER, an instrument for ascertaining the quantity of water that falls in rain and snow, in any particular climate or place.

PNEUMA'TICS, the science which treats of the mechanical properties of elastic or aeriform fluids: such as their weight, density, compressibility, and elasticity. The air being a heavy body, presses like other fluids, in every direction, upon whatever is immersed in it, and in proportion to the depths. This pressure may be thus shown:—Cover a wine glass, completely filled with water or wine, with a piece of writing paper: then place the palm of the hand over the paper, so as to hold it tight and accurately even. The glass may then be turned upside down, and the hand removed without the water running out. The pressure of the air upon the paper sustains the weight of water. The air can also be compressed into a much less space than it naturally occupies. Take a glass tube open only at one end: it is of course full of air: plunge the open end into a bowl of water, and you see the water rises an inch or so in the tube, the air, therefore, which before filled the whole length of the tube, is compressed into a smaller space. The pressure of the atmosphere is capable of





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IN ORDER TO DETERMINE THE HEIGHT OF THE ATMOSPHERE, THE DENSITY OF THE AIR AT DIFFERENT HEIGHTS MUST BE ASCERTAINED.

supporting about 33 feet of water or about 29 or 30 inches of quicksilver. If a glass tube upwards of thirty-one inches long be filled with quicksilver and have its aperture immersed in a basin of the same fluid, the altitude of the mercury in it will be found to vary both at different times and in different places. Hence it appears that the weight of the atmosphere is variable; and the above-mentioned tube filled with quicksilver has, from its showing the actual weight of the atmosphere, been called a BAROMETER. By removing the pressure from air it always expands, nor is it known to what degree this expansion will reach. By increasing the pressure, it may be condensed into any given space, however small, nor has this condensation any known limits. The density of the air is in proportion to the force that compresses it. In consequence of numerous investigations into the mechanical properties of the air, which were made by experimental philosophers in England, France, and Germany, after Torricelli had clearly demonstrated its pressure, not only was the barometer invented (1643), but it gave rise to a variety of pneumatic machines, as the air-pump, air-balloon, thermometer, &c. [For further information, the reader is referred to the articles ATMOSPHERE, AIR, AIR-PUMP, BAROMETER, FLUIDS, GRAVITY, &c.]

[From a desire to ascertain the result of certain aeronautic experiments which were much talked of at the time we commenced this volume, we omitted the article "AEROSTATION," and merely gave a definition of the word BALLOON, reserving for this place whatever we might at the time deem essential or most interesting. Instead, therefore, of reverting to the art when in its infancy, and narrating the trite accounts of former adventurers (whose imperfect knowledge of aerial navigation when compared with the practical and scientific data obtained by the repeated ascents of Mr. Green takes from them all their value), we have thought it advisable to confine our attention to the one grand aeronautic expedition of modern date, and to give that one, as it well deserves, without mutilation or unnecessary abridgment. We hardly need add, that it is the far-famed voyage from London to Nassau-Weilburg, accomplished in November, 1836, by R. Hollond, Esq., Mr. Green, and Mr. Monck Mason, the writer of the narrative.]

"It is not," as Mr. M. observes, "in the mere issue, successful or unsuccessful, that the chief merit or importance of such an enterprise can alone be said to consist. Designed with a view to special ends, and undertaken for the sole purpose of ascertaining and establishing the efficacy of certain improvements in the art, from which most beneficial results *were*, and I am now happy to add *are*, most likely to accrue, it becomes no less an obligation to ourselves than to the world in general, to make them partakers in the knowledge of whatever interesting or important circumstances either accompanied the progress of our expedition, or may justly be expected to attend the adoption of those improvements, the merits of which it was our sole object in the present instance to confirm. From the time of the first discovery of the properties and power of the balloon, up to a late period (already a lapse of more than half a century), a variety of obstacles apparently insurmountable continued to obstruct the progress, and paralyze the efforts of all who sought to render it obedient to the sway of human will, and subservient to the purposes of human life. The chief of these impediments consisted in the uncertainty and expense attending the process of inflation from the employment of hydrogen gas; the dangers considered inseparable from the practice of the art; the difficulties which hitherto have baffled all attempts to give a direction to the ungovernable mass, and the impossibility which all previous aeronauts have experienced of remaining in the air a sufficient time to ensure the attainment of a sufficient distance. To remove these obstacles and reduce the aerial vehicle to a more certain issue, a vast extent of actual experience, united to an intellect capable of turning it to a proper account, was absolutely required; and it would be an act of much injustice were I not to declare, that it is to the combination of both these in the person of Mr. Charles Green, that we are indebted for the entire results of all that is beneficial in the practice, or novel in the theory of this, the most delightful and sublime of all sublunary enjoyments. If was to him, and to his discovery of the applicability of coal gas to the purposes of inflation, that we owe the removal of the first of those impediments in practice, which till then had continued to weigh down with a leaden hand the efforts of the most indefatigable and expert, and had, in fact, bid fair to quench the incipient science in its very onset. Up to the period of that discovery, the process of inflation was one, the expense of which was only to be equalled by its uncertainty: two, and sometimes even three days of watchful anxiety, have been expended in the vain endeavours to procure a sufficiency of hydrogen to fill a balloon, from which, on account of its peculiar affinities, it continued to escape almost as fast as it was generated; during all which time the various casualties of wind and weather, the inevitable imperfections of a vast and cumbrous apparatus, and, above all, the enormous expense attending this operation, were to be incurred and endured, for the sole purpose, and with the sole object, of remaining for a few hours helplessly suspended in the air. Under such disadvantages all prospect of advancement in the art had speedily disappeared; and it was only by the timely intervention of Mr. Green's ingenious application that the art itself was saved from a premature extinction.—Aerostation had gone to sleep, when, roused by this discovery, she awoke to redoubled efforts, and rendered that, in the hands of the *skilful*, a profession and a profit, which before had ever been a matter

THE DENSITY OF THE AIR FROM THE SURFACE OF THE EARTH IS BELIEVED TO DECREASE IN A GEOMETRICAL PROPORTION.



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of doubt, difficulty, and distress.* With respect to the next of those impediments, which, in the opinion of mankind, might have continued to oppose the adoption of aerostation as an organ of general utility—I mean the danger usually considered as consequent upon the exercise of the art—much is not required to prove the fallacy of such fears: two hundred and twenty-six ascents [the number of ascents made by Mr. Green up to that time], undertaken at all periods of the year, without one disappointment to the public, and without one solitary instance of fatal consequence, or even of an accident of disagreeable results (except from the intervention of malice),† ought to be a sufficient proof of how little danger is to be apprehended in the practice of aerostation, when under the management of a skilful leader, and with the aid of those improvements to which his experience has given rise. It is not from the bungling efforts of unqualified persons that any judgment should be formed on this or other matters of practical detail; and where that skill is present, without which no one has a right to expect success, and those precautions have been observed which experience has shown to be requisite, I do not hesitate to say, that the practice of aerostation is as devoid of extraordinary danger as that of any other mode of conveyance hitherto adopted. Great, however, as are the merits of Mr. Green's previous discoveries, they may be said to yield in importance to that whereby he has succeeded in enabling the aeronaut to maintain the power of his balloon undiminished during the continuance of the most protracted voyage it could ever be required to perform.‡ In order fully to comprehend the value of this discovery, which more immediately formed the object of our late enterprise, it is necessary that some idea should be had of the difficulties it was intended to obviate, and of the effects they were calculated to produce upon the further progress of aerostation. When a balloon ascends to navigate the atmosphere, independent of the loss of power occasioned by its own imperfections, an incessant weight of its resources in gas and ballast becomes the inevitable consequence of its situation. No sooner has it quitted the earth than it is immediately subjected to the influence of a variety of circumstances tending to create a difference in its weight; augmenting or diminishing, as the case may be, the power by the means of which it is supported. The deposition or evaporation of humidity to the extent, in proportion to its size, of several hundredweight; the alternate heating and cooling of its gaseous contents by the remotion or interposition of clouds between the object itself and the influence of the solar rays, with a variety of other more secret, though not less powerful agencies, all so combine to destroy the equilibrium which it is the main object of the aeronaut to preserve, that scarcely a moment passes without some call for his interposition, either to check the descent of the balloon by the rejection of ballast, or to control its ascent by the proportionate discharge of gas; a process by which, it is unnecessary to observe, the whole power of the balloon, however great its dimensions, must in time be exhausted, and sooner or later terminate its career by succumbing to the laws of terrestrial gravitation. By the simple contrivance of a rope of the requisite magnitude and extent, trailing on the ground beneath (and if over the sea, with a sufficient quantity of liquid ballast contained in vessels floating on its surface), have all these difficulties been overcome, and all the features of the art completely and effectually reversed. Harnessed to the earth or ocean, by a power too great for her to resist, it is in vain the balloon endeavours to change the level of her onward course; every foot she would have been otherwise compelled to add to her elevation now only adds to her weight, by her endeavours to abstract from the earth a further portion of that rope which is dependent upon its surface; while, on the other hand, every foot she would have been inclined to descend, had she been at liberty as heretofore, now only abstracts from the weight which draws her downward, by throwing on the earth the labour of supporting an additional portion of the guide-rope, which she would otherwise have had

* Independent of the diminution of expense and risk, from the employment of coal-gas in preference to hydrogen, for the purpose of inflation, there are other advantages of great importance, one of which merits special notice: I allude to the superior facility with which the latter is retained in the balloon, owing to the greater subtilty of the particles of hydrogen, and the strong affinity which they exhibit for those of the surrounding atmosphere. In a balloon, sufficiently perfect to retain its contents of coal-gas unaltered in quality or amount for the space of six months, an equal quantity of hydrogen could not be maintained in equal purity for an equal number of weeks.

† The "intervention of malice" here alluded to occurred some years before at Cheltenham, when some ill-disposed person contrived to sever the ropes of the car in such a manner as not to be perceived before the balloon had reached a considerable elevation, whereby Mr. Green and his companion, Mr. Griffiths, were precipitated to the ground, and very narrowly escaped destruction. To this we may add, that Mr. Green's trip, in company with Mr. Macdonnell, from Cremorne House, Chelsea, on the 10th of August, 1840, had well nigh proved fatal to both, the violence of the wind having rendered their descent in the highest degree perilous.

‡ Mr. Green has since (1840) given notice of his intention, at no distant day, of crossing from the American continent to Europe, and, by taking advantage of the prevalent westerly winds at certain seasons, confidently predicts success.



WHEN AIR OR ANY OTHER ELASTIC FLUID IS DILATED, BY RELAXING THE SPACE IN WHICH IT IS ENCLOSED, COLD WILL BE PRODUCED.

AIR, WHEN ALLOWED, WILL ALWAYS RUSH FROM THAT PART WHERE THERE IS MORE TO WHERE THERE IS LESS PRESSURE.

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A FORCE EIGHT TIMES GREATER THAN THE PRESSURE OF THE ATMOSPHERE WILL COMPRESS AIR INTO THE EIGHTH PART OF ITS BULK.

to sustain without relief. Limited to one unalterable plane, all the fluctuations above mentioned, whereby her irreparable stock of power became subjected to incessant waste, have thus completely been avoided, and not only her ascensive force maintained in its full vigour throughout a period determinable solely by her own imperfections, but at all times, and under all circumstances, over the boundless ocean, without a landmark in the denasest fog, and throughout the darkest night the exact direction of her course, as well as the very rate of her progress determined with the utmost facility, and most infallible results. The main feature however in this discovery, is the altered aspect under which it enables the aeronaut to regard the perils of the sea, and the consequent extension it bestows upon the hitherto limited sphere of his relations. The ocean, now no longer the dreaded enemy of the aerial voyager, becomes at once his greatest friend; and instead of opposing his progress, offers him advantages more certain and efficacious than even the earth itself, with all its presumed security, is calculated to contribute. Such then was the actual state of aerostation when Mr. Robert Hollond, a gentleman who had long cultivated a practical acquaintance with the art, resolved to afford an opportunity for a full display, and unequivocal determination of the merits of these discoveries, by undertaking at his own expense to fit out an expedition, under the guidance of Mr. Green (in which he was so kind as to include me), for the purpose, and with the intention of starting from London and proceeding (in whatever direction the winds at that time prevailing might happen to convey us), to such a distance as would suffice to answer the ends for which the voyage was especially designed. Accordingly the proprietors, Messrs. Gye and Hughes, having kindly conceded the use of the great Vauxhall Balloon, and of their premises, for the purpose of the ascent; after several unavoidable delays, occasioned chiefly by the weather, the day of departure was fixed for Monday, Nov. 7th, 1836, and the process of inflation having been commenced at an early hour, everything was got ready for starting by one o'clock in the afternoon of the same day. The appearance which the balloon exhibited previous to the ascent, was no less interesting than strange. Provisions, which had been calculated for a fortnight's consumption in case of emergency; ballast to the amount of upwards of a ton in weight, disposed in bags of different sizes, duly registered and marked, together with an unusual supply of cordage, implements, and other accessories to an aerial excursion, occupied the bottom of the car; while all around the hoop and elsewhere appended, hung cloaks, carpet-bags, barrels of wood and copper, coffee-warmer, barometers, telescopes, lamps, wine jars and spirit flasks, with many other articles, designed to serve the purposes of a voyage to regions where, once forgotten, nothing could be again supplied. Among the other matters with which we had taken the precaution to provide ourselves, were passports directed to all parts of the continent, specifying the peculiar nature of our voyage, and entitling us to exemption from the usual formalities of office. Thus prepared, and duly accoutred, at half-past one o'clock the balloon was dismissed from the ground, and rising gently under the influence of a moderate breeze, bore speedily away towards the south-east, traversing in her course the cultivated plains of Kent, and passing in succession nearly over the towns of Eltham, Bromley, Footscray, and others, whose variegated outlines beautifully diversified the rich landscape that lay beneath us. The weather was uncommonly fine for the time of year; a few light clouds alone floated in the sky, and at least as useful as ornamental, served to indicate the existence of different currents at different altitudes: an information of which, it will be seen hereafter, we were enabled to avail ourselves with much effect. Continuing in a south-easterly direction, at forty-eight minutes past two we crossed the Medway, at the distance of about six miles to the west of Rochester, and in little more than an hour after were in sight of the city of Canterbury, the lofty towers of its cathedral bearing distant about two miles, in a westerly direction. In a few minutes after we obtained our first view of the sea, brightening under the last rays of a setting sun, and occupyiug the extreme verge of the horizon, in the direction in which we were now rapidly advancing. It was at this period of our voyage that the first opportunity occurred of showing how far it was possible for the skilful and experienced aeronaut to influence the course of his aerial vessel, by availing himself of the advantages which circumstances frequently place at his disposal. Shortly after we had lost sight of the city of Canterbury a considerable deviation appeared to have taken place in the direction of our route. Instead of pursuing our former line of south by east, which was that of the upper current, by means of which we had hitherto advanced, it became apparent that we were now rapidly bearing away upon one which tended considerably to the northward, and which, had we continued to remain within the limits of its influence, would have shortly brought us to sea, in the direction of the North Foreland. As it had all along been an object to proceed as near to Paris as circumstances would permit,* we resolved to recover as soon as possible the advantages which a superior current had hitherto afforded us, and accordingly rose to resume a station

* The proprietors of the balloon having contemplated making an ascent from Paris, and Mr. Hollond having undertaken to transfer the balloon thither, it became a consideration with us not to increase our distance from that capital more than was consistent with the main object of the expedition.

ALL THE MODIFICATIONS OF MOTION OBSERVED IN WATER CONDUITS TAKES PLACE ALSO IN THE PASSAGE OF AIR THROUGH PIPES.



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upon our previous level. Nothing could exceed the beauty of this manœuvre, or the success with which the balloon acknowledged the influence of her former associate. Scarcely had the superfluous burden been discharged proportioned to the effect required, when slowly she arose, and sweeping majestically round the horizon, obedient to the double impulse of her increasing elevation and the gradual change of current, brought us successively in sight of all those objects which we had shortly before left retiring behind us, and in a few minutes placed us almost vertically over the castle of Dover, in the exact direction of crossing the straits between that town and Calais, where it is confined within its narrowest limits. It was forty-eight minutes past four when the first line of waves breaking on the beach appeared beneath us, and we might be said to have fairly quitted the shores of our native soil, and entered upon the hitherto dreaded regions of the sea. It would be impossible not to have been struck with the grandeur of the prospect at this particular moment of our voyage; the more especially as the approaching shades of night rendered it a matter of certainty that it would be the last in which earth would form a prominent feature, that we might expect to enjoy for a considerable lapse of time. Behind us, the whole line of English coast, its white cliffs melting into obscurity, appeared sparkling with the scattered lights, which every moment augmented, among which the light-house at Dover formed a conspicuous feature, and for a long time served as a beacon whereby to calculate the direction of our course. On either side below us the interminable ocean spread its complicated tissue of waves without interruption or curtailment, except what arose from the impending darkness, and the limited extent of our own perceptions; on the opposite side a dense barrier of clouds rising from the ocean like a solid wall fantastically surmounted, throughout its whole length, with a gigantic representation of parapets and turrets, batteries and bastions, and other features of mural fortifications, appeared as if designed to bar our further progress, and completely obstructed all view of the shores, towards which we were now rapidly drawing nigh. In a few minutes after we had entered within its dusky limits, and for a while became involved in the double obscurity of the surrounding vapours and of the gradual approach of night. Not a sound now reached our ears; the beating of the waves upon the British shores had already died away in silence, and from the ordinary effects of terrestrial agitation our present position had effectually excluded us. In this situation, we prepared to avail ourselves of those contrivances, the merits of which, as I have already stated, it was one of the main objects of our expedition to ascertain; and consequently, to provide against the loss of power by the increase of weight proceeding from the humidity of the atmosphere, naturally to be expected on the approach of night, we commenced lowering the copper vessels which we had provided for the occasion. Scarcely, however, had we completed our design, and were patiently awaiting the descent we had anticipated, when the faint sound of the waves beating against the shore again returned upon our ears, and awakened our attention. The first impression which this event was calculated to convey, was that the wind had changed, and that we were in the act of returning to the shores we had so shortly before abandoned. A glance or two, however, served to show us the fallacy of this impression; the well-known lights of Calais and of the neighbouring shores were already glittering beneath us; the barrier of clouds which I have before mentioned as starting up so abruptly in our path, as abruptly terminated; and the whole adjacent coast of France, variegated with lights, and ripe with all the nocturnal signs of population, burst at once upon our view. We had, in fact, crossed the sea; and in the short space of about one hour, from the time we had quitted the shores of England, were floating tranquilly, though rapidly, above those of our Gallic neighbours. It was exactly fifty minutes past five when we had thoroughly completed this *trajet*; the point at which we first crossed the French shore bearing distant about two miles to the westward of the main body of the lights of Calais, our altitude at the time being somewhat about three thousand feet above the level of the ocean. As it was now perfectly dark we lowered a Bengal light, at the end of a long cord, in order to signify our presence to the inhabitants below; shortly after, we had the satisfaction to hear the beating of drums, but whether on our account, or merely in performance of the usual routine of military duty, we were not at the time exactly able to determine. Before dismissing the sea, a word or two seems required to counteract a vague and incorrect impression regarding its peculiar influence upon the buoyancy of the balloon, arising from the difficulties experienced by Messrs. Blanchard and Jeffries in their passage of the same straits in the year 1785, and the apparently unaccountable remotion of their difficulties as soon as they had reached the opposite coast. So many, however, are the circumstances within the range of aeronautical experience to which, without intruding upon the marvellous, or calling new affinities into existence, these effects can be satisfactorily attributed, that the actual difficulty lies in ascertaining to which of them they are most likely to have owed their origin; of these the increase of weight by the deposition of humidity on the surface of the balloon, occasioned by the colder atmosphere through which the first part of their journey had to be pursued, and the subsequent evaporation of the same by the rise of temperature to which they necessarily became subjected as soon as they came within the calorific influence of the land, is in itself quite sufficient to explain the difference that existed in the buoy-





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WE FIND THAT, IN RAINY WEATHER, A CONSIDERABLE WIND FREQUENTLY PRECEDES THE APPROACH OF EVERY SINGLE CLOUD.

ancy of the balloon during the different stages of its progress. Even in the absence of any humidity whereby the actual weight of the balloon could have been increased, the mere diminution of temperature, by condensing its gaseous contents; and their subsequent rarefaction by the altered temperature they were sure to encounter when they reached the opposite coast, is more than enough to account for much greater effects than even those to which it is here intended to apply. As far as we were concerned certainly no such uncommon impression was observable, nor did we experience any diminution of ascensive power in our transit across the sea, beyond what we should have expected under similar circumstances over a similar extent of land. The night having now completely closed in, and no prospect of any assistance from the moon to facilitate our researches, it was only by means of the lights which either singly or in masses appeared spreading in every direction, that we could hope to take any account of the nature of the country we were traversing, or form any opinion of the towns or villages which were continually becoming subjected to our view. The scene itself was one which exceeds description. The whole plane of the earth's surface, for many and many a league around, as far and farther than the eye distinctly could embrace, seemed absolutely teeming with the scattered fires of a watchful population, and exhibited a starry spectacle below that almost rivalled in brilliancy the remoter lustre of the concave firmament above. Incessantly during the earlier portion of the night, ere the vigilant inhabitants had finally retired to rest, large sources of light, betokening the presence of some more extensive community, would appear just looming above the distant horizon in the direction in which we were advancing, bearing at first no faint resemblance to the effect produced by some vast conflagration, when seen from such a distance as to preclude the minute investigation of its details. By degrees, as we drew nigh, this confused mass of illumination would appear to increase in intensity, extending itself over a larger portion of the earth, and assuming a distincter form and a more imposing appearance, until at length, having attained a position from whence we could more immediately direct our view, it would gradually resolve itself into its parts, and shooting out into streets, or spreading into squares, present us with the most perfect model of a town, diminished only in size, according to the elevation from which we happened at the time to observe it. It would be very difficult, if not impossible, to convey to the minds of the uninitiated any adequate idea of the stupendous effect which such an exhibition, under all its concomitant peculiarities, was calculated to create. That we were, by such a mode of conveyance, amid the vast solitude of the skies, in the dead of night, unknown and unnoticed, secretly and silently reviewing kingdoms, exploring territories, and surveying cities, in such rapid succession as scarcely to afford time for criticism or conjecture, was in itself a consideration sufficient to give sublimity to far less interesting scenes than those which formed the subject of our present contemplations. If to this be added the uncertainty that from henceforward began to pervade the whole of our course—an uncertainty that every moment increased as we proceeded deeper into the shades of night, and became further removed from those landmarks to which we might have referred in aid of our conjectures, clothing everything with the dark mantle of mystery, and leaving us in doubt more perplexing even than ignorance as to where we were, whither we were proceeding, and what were the objects that so much attracted our attention—some faint idea may be formed of the peculiarity of our situation and of the impressions to which it naturally gave rise. In this manner, and under the influence of these sentiments, did we traverse with rapid strides a large and interesting portion of the European continent, embracing within our horizon an immense succession of towns and villages, whereof those which occurred during the earlier part of the night, the presence of their artificial illumination alone enabled us to distinguish. Among these latter, one in particular, both from its own superior attractions, the length of time it continued within our view, and the uninterrupted prospect which our position directly above it enabled us to command, captivated our attention and elicited constant expressions of mingled admiration and surprise. Situated in the centre of a district which actually appeared to blaze with the innumerable fires wherewith it was studded in every direction to the full extent of all our visible horizon, it seemed to offer in itself, and at one glance, an epitome of all those charms which we had been previously observing in detail. The perfect correctness with which every line of street was marked out by its particular line of fires; the forms and positions of the more important features of the city, the theatres and squares, the markets and public buildings, indicated by the presence of the larger and more irregular accumulation of lights, added to the faint murmur of a busy population still actively engaged in the pursuits of pleasure or the avocations of gain, all together combined to form a picture which for singularity and effect certainly could never have been before conceived. This was the city of Liege, remarkable from the extensive iron-works which, abounding in its neighbourhood, occasioned the peculiar appearance already described, and at the time led to that conjecture, concerning its identity, the truth of which a subsequent inquiry enabled us to confirm. This was the last spectacle of the kind which we were destined to enjoy. Scarcely had we completely cleared the town and the fiery region in which it was embosomed, ere an unbroken obscurity, more profound than any we had yet expe-

WHATEVER ACCUMULATES THE AIR IN ONE PLACE, AND DIMINISHES IT IN OTHER PLACES, MUST NECESSARILY OCCASION A WIND.



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rienced, involved us in its folds, and effectually excluded every terrestrial object from our view. It was now past midnight, and the world and its inhabitants had finally committed themselves to repose. Every light was extinguished, and every sound hushed into silence; even the cheerful tones of the vigilant watch-dog, which had frequently contributed to enliven our course during the previous portion of the night, had now ceased; and darkness and tranquillity reigned paramount over the whole adjacent surface of the globe. From this period of our voyage until the dawning of the following day, the record of our adventures becomes tinged with the obscurity of night. The face of nature completely excluded from our view, except when circumstances occasionally brought us into nearer contact with the earth, all our observations during the above period are necessarily confined to a register of incidents and sensations mingled with vague conjectures, and clouded with the mystery wherewith darkness and uncertainty were destined to involve so large a portion of the remainder of our expedition. The moon, to which we might have looked up for companionship and assistance, had she been present, was no where to be seen. The sky, at all times darker when viewed from an elevation than it appears to those inhabiting the lower regions of earth, seemed almost black with the intensity of night; while, by contrast no doubt, and the remotion of intervening vapours, the stars, redoubled in their lustre, shone like sparks of the whitest silver scattered upon the jetty dome around us. Occasionally faint flashes of lightning, proceeding chiefly from the northern hemisphere, would for an instant illuminate the horizon, and after disclosing a transient prospect of the adjacent country, suddenly subside, leaving us involved in more than our original obscurity. Nothing, in fact, could exceed the density of night which prevailed during this particular period of the voyage. Not a single object of terrestrial nature could anywhere be distinguished; an unfathomable abyss of "darkness visible" seemed to encompass us on every side; and as we looked forward into its black obscurity in the direction in which we were proceeding, we could scarcely avoid the impression that we were clawing our way through an interminable mass of black marble in which we were imbedded, and which, solid a few inches before us, seemed to soften as we approached, in order to admit us still farther within the precincts of its cold and dusky enclosure. Even the lights which at times we lowered from the car, instead of dispelling, only tended to augment the intensity of the surrounding darkness, and as they descended deeper into its frozen bosom, appeared absolutely to melt their way onward by means of the heat which they generated in their course. The cold, during this part of the night especially, was certainly intense, as could be perceived not less from the indications of the thermometer (ranging variously from within a few degrees below to the point of congelation), than from the effects which it produced upon the different liquors wherewith we were provided. The water, coffee, and, of course, the oil in our several vessels, were completely frozen; and it was only by the actual application of the heat of the lamp that we were enabled to procure a sufficiency of the latter to supply our wants during the long term of darkness to which we were about to be subjected. Strange, however, as it may appear, while all around bore such unequivocal testimony to the severity of the cold, the effects produced upon our persons, undefended as they were by any extraordinary precautions, were by no means commensurate to the cause, nor such as even under ordinary circumstances we might fairly have expected to encounter. The reason to which may be attributed this unusual exemption from the consequences of a low temperature, is the absence of all current of air, the natural result of our situation, and one of the peculiar characteristics of aerial navigation. To this intensity of cold, preceded by a long subjection to the action of a humid atmosphere, while floating at a lower elevation, is likewise to be attributed the occurrence of an incident which, for the impression it is calculated to produce upon the minds of those who experience it for the first time, and in ignorance of its cause, merits particularly to be noticed. It was about half-past three in the morning, when the balloon, having gained a sudden accession of power, owing to a discharge of ballast, which had taken place a few minutes before, while navigating too near the earth to be considered perfectly safe in a country, with the main features of which we were totally unacquainted, began to rise with considerable rapidity, and ere we had taken the customary means to check her ascent, had already attained an elevation of upwards of twelve thousand feet. At this moment, while all around is impenetrable darkness and stillness, and darkness most profound, an unusual explosion issues from the machine above, followed instantaneously by a violent rustling of the silk, and all the signs which may be supposed to accompany the bursting of the balloon, in a region where nothing but itself exists to give occasion to such awful and unnatural disturbance. In the same instant, the car, as if suddenly detached from its hold, becomes subjected to a violent concussion, and appears at once to be in the act of sinking with all its contents into the dark abyss below. A second and a third explosion follow in quick succession, accompanied by a recurrence of the same astounding effects; leaving not a doubt upon the mind of the unconscious voyager of the fate which nothing now appears capable of averting. In a moment after all is tranquil and secure; the balloon has recovered her usual form and stillness, and nothing appears to designate the unnatural agitation to which she has been so lately and unaccountably subjected. The occurrence of this phenomenon, however



IF THE AIR BE SUDDENLY CONDENSED IN ANY PLACE, ITS SPRING OR ELASTICITY WILL BE SUDDENLY DIMINISHED.

AIR BEING A FLUID SUBJECT TO THE LAWS OF OTHER FLUIDS, ITS FORCE MAY BE REGULARLY BROUGHT TO A PRECISE COMPUTATION.

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strange it may appear, is, nevertheless, susceptible of the simplest resolution, and consists in the tendency to enlargement from remotion of pressure which the balloon experiences in rising from a low to a higher position in the atmosphere, and the resistance to this enlargement occasioned by the net-work previously saturated with moisture, and subsequently congealed into the elliptical form which the dependent weight of the car obliges it to assume, whenever the shrunken capacity of the sphere it encompasses will admit of its longitudinal distension. As this resistance is occasioned by the intervention of a *non-elastic* medium (the ice) which has bound the meshes of the net-work in their contracted form, it is evident that the liberation occasioned by their disrupture will not take place until the internal pressure of the balloon has reached a certain amount; when *suddenly* that liberation is accomplished, attended by those collateral effects which we have already attempted to describe. The impression of the descent of the car in the above representation is evidently a false one; the car, so far from sinking, actually springs up; it is the unexpectedness of such a movement, and its apparent inconsistency with the laws of gravitation that occasions the delusion, the reality of which the concomitant circumstances essentially tend to confirm. Several times during the latter part of the night we had approached so near to the earth, as to be enabled to observe, imperfectly, it is true, some of its most prominent features, and to obtain some faint idea of the nature of the ground beneath us. At these times we appeared to be traversing large tracts of country partially covered with snow, diversified with forests, and intersected occasionally with rivers, of which the Meuse, in the earlier part of the night, and the Rhine, towards the conclusion, formed, as we afterwards learned, the principal objects, both of our admiration and of our conjectures. Large masses of fleecy cloud would at times likewise occupy the lower regions of the atmosphere, intercepting our view as we descended, and for a while leaving us in doubt whether they were not a continuation of those snowy districts which we so frequently had occasion to remark. From out of this mass of vapours, more than once during the night our ears became assailed with sounds bearing so strong a resemblance to the rushing of waters in enormous volumes, or the beating of the waves upon some extensive line of coast, that it required all our powers of reasoning, aided by the certain knowledge we had of the direction we were pursuing, to remove the conviction that we were approaching the precincts of the sea, and transported by the winds, were either thrown back upon the shores of the German ocean, or about to enter upon the remoter limits of the Baltic. It would be endless to enumerate all the conjectures to which this phenomenon gave rise, or the various manners by which we endeavoured to explain its occurrence. Among them those which seemed to obtain the greatest credit, were that the sound proceeded from some vast forest, agitated by the winds; some rapid river rushing impetuously over a broken and precipitous channel: or finally, that the misty vapours themselves, by the mutual action of their watery particles, or their precipitated deposition upon the irregular surface of the earth beneath, had occasioned the murmurs which multiplied throughout so large a space, came to our ears in the formidable accents to which we have above alluded. According as the day drew nigh these appearances vanished, with much of the doubts to which they had given rise. Instead of the unbroken outline of the sea, an irregular surface of cultivated country began gradually to display itself; in the midst of which the majestic river we had noticed for some time back, appeared dividing the prospect, and losing itself in opposite directions amid the vapours that still clung to the summits of the hills, or settled in the valleys that lay between them. Across this river we now directed our course, and shortly after lost sight of it entirely behind the gently swelling eminences by which it was bordered on both sides. It was about six o'clock,* during an ascent which occurred shortly after we had crossed this river, that the balloon having reached a considerable elevation, showed us our first view of the sun, and gladdened us with the prospect of a speedy approach of day. Powerful, indeed, must be the pen which could hope to do justice to a scene like that which here presented itself to our view. The enormous extent of the prospect—the boundless variety it embraced—the unequalled grandeur of the objects it displayed—the singular novelty of the manner under which they were beheld—and the striking contrast they afforded to that situation and those scenes to which we had so long and so lately been confined, are effects and circumstances which no description is capable of representing in the light in which they ought to be placed, in order to be duly appreciated. Better by far to leave it to a fertile imagination to fill in the faint outlines of a rough and unfinished sketch, than, by a lame and imperfect colouring, run the risk of marring a prospect which, for grandeur and magnificence, has certainly no parallel in all the vast and inexhaustible treasures of nature. This splendid spectacle, however, we were not long destined to enjoy; a rapid descent, which shortly after

* The time referred to here and elsewhere throughout this narrative, is that of Greenwich. Upon the completion of the voyage, a difference, amounting to about thirty-four minutes, was found to exist between the times indicated at its two extremes; the chronometers of Weilberg being so much in advance of those of London. This difference was occasioned by the easterly direction of our course, and the difference in latitude to the extent of eight degrees, twenty minutes between the two places.



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THE MOTION OF A CLOUD, OR ITS SHADOW ON THE EARTH, IS A TOLERABLE MEASURE OF THE VELOCITY OF THE WIND.

A HURRICANE THAT TEARS UP TREES, AND CARRIES BUILDINGS, &c. BEFORE IT, MOVES AT THE RATE OF 100 MILES AN HOUR.

ensued, for a while concealed it from our view, and once more consigned us to the shades of night, which still continued to reign unbroken throughout the lower region of the air. Again we rose within reach of this delightful prospect: and again did we lose sight of it amid the vapours and obscurity that accompanied our descent; nor was it till we had three times made the sun rise, and twice beheld it set, that we could fairly consider it established above the horizon, and daylight complete upon the plane of the earth beneath us. From this time forward all our observation was principally directed to the nature of the country, and its adaptation to the descent which we had now resolved to effect, the first fitting opportunity. To this step, the uncertainty in which we necessarily were, with respect to the exact position we occupied, owing to our ignorance of the *distance* we had come, especially determined us. For a long time past, the appearance of the country, so unlike any with which we were acquainted, had led us to entertain serious doubts as to whether we had not already passed the limits of that part of Europe where we might expect to find the accommodation and conveniences which our own comfort, and the safety of the balloon, imperatively demanded. This opinion, the large tracts of snow over which we had passed, during the latter part of the night, bearing a strong resemblance to all we had hitherto pictured to ourselves of the boundless plains of Poland, or the barren and inhospitable steppes of Russia, considerably tended to confirm; and as the regions were immediately approaching seemed to offer advantages which, under these circumstances, we could not always hope to command, we resolved not to lose the occasion it so opportunely appeared to have afforded us. As soon as we had come to this determination, all preparations were speedily commenced for the descent; the guide-rope was hauled in (an operation of much labour, owing to the bad construction and imperfect action of the windlass); the grapnel and cable lowered, and everything got ready, that we might be able to avail ourselves of the first and fittest opportunity that might occur. To this intent, likewise, we quitted our exalted station, and sought a more humble and appropriate level, along which we continued to range for some time, and to a considerable distance; the yet early hour of the day deterring us from completing the descent, in the fear of not obtaining that ready assistance from the inhabitants which it is always the main object of the aeronaut, if possible, to secure. As the mists of the night began to clear away from the surface of the soil, we were delighted to perceive a country intersected with roads, dotted with villages, and enlivened with all the signs of an abundant and industrious population. One or two towns, likewise, of superior pretensions, were distinctly to be seen, giving promise of accommodation and advantages which, in our present emergencies, and under our present convictions, were not to be neglected. Accordingly, having pitched upon the spot most proper for the purpose, the valve was opened, and we commenced our descent. The place so selected was a small grassy vale, of about a quarter of a mile in breadth, embosomed in hills, whose sides and summits were completely enveloped with trees. Beyond this, on the opposite side, lay another valley of the same description, the only one visible for many miles, where we could conveniently effect our landing; an endless succession of forest scenery completing the landscape in the direction in which we should have to proceed. Into the former of these we now precipitated our descent, with the design of alighting, if possible, in the centre, clear of the woods that enclosed it on all sides. In these hopes, we were, however, disappointed; the wind suddenly increasing as we approached the ground, so much accelerated the onward progress of the balloon, that before the grapnel could take effectual hold of the soil we had passed the middle of the valley, and sweeping rapidly over the ground, were borne close against the wooded declivity that flanked its eastern termination. To discharge a sufficiency of ballast to raise the balloon and carry her clear of the impending danger, was the natural remedy. An unexpected obstacle to this operation here again presented itself: the sand which forms the ballast, frozen during the night into a solid block of stone, refused to quit the bag in the proportion required; and no time remained to search for one more suited to the occasion. Not a moment, was, in fact, to be lost; the valley was passed, and the branches of the trees that covered the opposing precipice, were already within a few feet of the balloon; the grapnel continued to drag, and no chance appeared of arresting her progress onward. In this emergency one alternative alone remained, and the sack itself, with all its contents, to the amount of fifty-six pounds in weight, were consigned to the earth. In a moment, the balloon, lightened of so large portion of her burden, had sprung up above 1000 feet, and clearing the mountain at a bound, was soon in rapid progress to the realms above. To counteract the consequence of this sudden accession of power, and avoid being carried beyond the reach of the second valley, which we have already described as the only other available spot for our descent, the valve was again opened, and issue given to a large quantity of gas, sufficient, as was calculated, to check the course of the balloon in time to enable us to attain the point to which all our views were now directed. A second time, however, were we doomed to be disappointed. No sooner had we completed this manœuvre, than by another caprice of nature, the wind suddenly abating, we found ourselves at once becalmed, and rapidly descending into the bosom of the woods that capped the summit, and clothed the sides of the intervening eminences. From this dilemma we were only relieved by the timely discharge of a further portion of our weight; not, however, before the ac-

AIR, BY ITS EXPANSIVE PROPERTY, ENTERS WITH FACILITY INTO ALL PARTS NOT ALREADY OCCUPIED BY THE PRESSURE OF SOLID MATTER.

THE UPPER ATMOSPHERE SEEMS TO BE COMPOSED OF A LARGE PROPORTION OF NITROGEN; THE LOWER CHIEFLY OF OXYGEN AND NITROGEN.



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celerated descent of the balloon had brought us within a cable's length of the ground (about 120 feet), and almost in contact with the upper surface of the wood. Here, for a few moments, we continued to hover; the grapnel struggling with the topmost branches of the trees, and grasping and relinquishing its hold according to the varying impulse of the slight wind that prevailed at our elevation. While in this situation, we perceived, standing in the path of the wood, two females, the first inhabitants we had noticed, lost in astonishment, and absolutely petrified with gazing upon so astounding an apparition. It was in vain we addressed them with a speaking-trumpet, in the hopes of procuring the assistance of some of the male population, which we conjectured could not be far off; the sound of our voices, proceeding from such an altitude, and invested with such an unearthly character, only augmented their astonishment and added to their fears: they fled incontinently, and without waiting farther parley sought the shelter of the neighbouring coverts. After continuing for a few minutes longer in these straits, we at length reached the confines of the wood, when, resolving not to be again baffled in our designs by the treacherous inconstancy of the wind, the valve was opened to its fullest dimensions, and the grapnel taking hold shortly after, we came to the ground with considerable, though by no means disagreeable rapidity. As soon as the descent was completed, and the power of the balloon sufficiently crippled to permit one of the party to quit the car, the inhabitants who had hitherto stood aloof, regarding our manœuvres from behind the trees, began to flock in from all quarters, eyeing at first, our movements with considerable suspicion, and not seldom looking up in the direction from which we had just alighted, in the expectation, no doubt, of witnessing a repetition of this, to them, inexplicable phenomenon. A few words in German, however, served to dissipate their fears and secure their services; when, as if eager by present assiduity to make amends for former backwardness, they absolutely seemed to contend with each other in their exertions to afford us assistance, and execute our several behests. To this kindly feeling we endeavoured to contribute by every means in our power. Our stock of biscuits, wine, and brandy, quickly disappeared, with a relish which the novelty of the journey they had so lately performed, tended, no doubt, considerably to augment. The brandy, in particular, so much stronger than any they had ever before essayed, attracted their special admiration; and as they each in succession drank off their allowance, seemed by the exclamation of "Himmlischer Schnapps" (celestial dram), which accompanied every draught, as well as by the upward direction of their eyes, to denote the quarter from which they now became fully convinced, a beverage so delicious could alone have proceeded. From them we now also learned where it was that we really had alighted, and, for the first time, became aware that we were in the Grand Duchy of Nassau, and about two leagues from the town of Weilburg, the nearest where we could expect to meet with the accommodation which the circumstances of the case rendered desirable. Thither, therefore, we determined to proceed, and having procured a cart and horses for the transportation of the balloon, we quitted this, to us, ever memorable spot, and attended by an amazing concourse of persons of every rank, age, and sex, set out for Weilburg, which a few hours enabled us to attain. The fame of our adventure had, however, already preceded us. On our approach we found ourselves greeted with acclamations, and a ready welcome and honourable attentions awaited our arrival. All the resources of the town were immediately placed at our disposal; the use of the archducal manège was tendered for the occupation of the balloon; and sentries, more indeed as a guard of honour than protection, stationed at the doors and avenues leading to the place of its reception. * * Thus ended an expedition which, whether we regard the extent of country it passed over, the time wherein it was performed, or the result of the experiment for the sake of which it was undertaken, may fairly claim to be considered among the most interesting and important which have hitherto proceeded from the same source. Starting from London and traversing the sea, which mere accident alone prevented from forming a more important feature in our route, in the short space of eighteen hours we performed a voyage which, including only those deviations we have since been enabled to ascertain, rather exceeds than falls short of an extent of five hundred British miles!" The following remark is well worthy of notice, inasmuch as it goes to contradict a generally received opinion:—"We frequently rose to an elevation of about twelve thousand feet—occasionally higher. At no time, however, did we experience the *slightest* effect upon our bodies, proceeding from the diminished pressure of the atmosphere. Nor, from what my own observations, and still more those of Mr. Green (whose experience in such matters far outweighs that of all the aeronautical world together), would lead me to assert, do I believe that any such effects as are currently attributed to this diminished pressure, have any existence at all; at least, at any elevation to which any person has hitherto been enabled to arrive."

PNEUMATOL'OGY, the doctrine of the properties of elastic fluids, or of spiritual substances.

PNEUMO'NIA, in medicine, inflammation of the lungs; a genus of disease in the class *Pyrexiæ*, and order *Phlegmasiæ*, of Cullen, characterized by difficult respiration, cough, and a sense of weight and pain in the thorax.

PNEUMON'ICS, medicines proper in diseases of the lungs, in which respiration is affected.

PO'A, in botany, a genus of plants, class



ANY INFLAMMABLE SUBSTANCE PREVIOUSLY KINDLED AND INTRODUCED INTO OXYGEN GAS, BURNS RAPIDLY AND VIVIDLY.

THE DISCOVERY OF GASEOUS BODIES, IN THE LAST CENTURY, MAY BE CONSIDERED AS THE PERFECTION OF PNEUMATIC SCIENCE.

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3 *Triandria*, order 2 *Digynia*. The species are mostly perennials, and consist of various kinds of meadow-grass.

POD, the pericarp, capsule, or seed-vessel of certain plants. It is a word in popular use, but never scientifically applied.

PODA'GRA, in medicine, that species of gout which recurs at regular intervals, attacking the joints of the foot, particularly the great toe, the pain of which is described as resembling that produced by laying a burning coal upon the toe. When the disease is violent, the whole foot is so sensitive, that the slightest pressure, the lightest touch, or even the agitation occasioned by a strong draught of air, causes excruciating pain. The attacks usually recur once a-year, in spring or autumn, sometimes twice, and even oftener.

PO'ET, one who has a particular genius for metrical composition, combined with those higher requisites which belong to a lively imagination, and a keen sense of the beauties of nature. Many write verses who have no just claim to the title of *poets*, and yet such writers may be many degrees beyond those versifying scribes who, in derision, are termed *poetasters*.

POET'ICAL JUSTICE, a term often used in speaking of dramatic writings, to denote a distribution of rewards and punishments to the several characters at the catastrophe or close of a piece.

PO'ET LAU'REATE, the appellation given to a poet whose duty it is to compose birth-day odes, and other poems of rejoicing, for the monarch in whose service he is retained. The laureate's post in England is at present filled by Dr. Southey, and the services formerly required are dispensed with. The first mention of a king's poet in England, under the title of poet laureate, occurs in the reign of Edward IV. *Poeta laureatus* was, however, also an academical title in England, conferred by the universities when the candidate received the degrees in grammar (which included rhetoric and versification). The last instance of a laureated degree at Oxford occurs in 1512. Ben Jonson was court poet to James I. and received a pension, but does not appear to have the title of laureate formally granted him. Dryden was appointed laureate to Charles II., and afterwards to James II., by regular patent under privy seal. Nahum Tate, Rowe, Eusden, Cibber, Whitehead, T. Warton, Pye, and Southey (the last of whom was appointed in 1813) have been Dryden's successors.

POETRY, in its ordinary acceptation, is the art of expressing sentiments in measured language according to certain rules, harmony, and taste. It is divided into blank verse and rhyme, and denominated according to its subject; as pastoral for rural objects; elegiac for plaintive pieces; lyrical, or ballad; didactic, or instructive; satirical, or humorous; and dramatic, or conversational. But, agreeably with the extensive signification of its Greek origin (I create), poetry assuredly includes every effusion, every creation of the mind, whether expressed by the pen, the pencil, or the reed. In all cases, poetry has the same general character: that of an appeal to the passions, and an attempt to win over the hearer to the conceptions of the poet, whether those conceptions be just or otherwise. The *rules* of poetry and versifying are taught by art, and acquired by study; but this force and elevation of thought, which Horace calls something divine, and which alone makes the poetry of any value, must be derived from nature. In Dr. Channing's remarks on the character and writings of Milton, there are some splendid passages on the "art divine" which are so just and forcible, so full of energy and beauty, that we are glad to transcribe them for the reader, rather than attempt of ourselves to delineate "the language of the imagination and the passions." This admirable writer says, "In an intellectual nature, framed for progress and for higher modes of being, there must be creative energies, powers of original and ever-growing thought; and poetry is the form in which these energies are chiefly manifested. It is the glorious prerogative of this art that 'it makes all things new' for the gratification of a divine instinct. It indeed finds its elements in what it actually sees and experiences in the worlds of matter and mind; but it combines and blends these into new forms and according to new affinities; breaks down, if we may so say, the distinctions and bounds of nature; imparts to material objects life, and sentiment, and emotion, and invests the mind with the powers and splendours of the outward creation; describes the surrounding universe in the colours which the passions throw over it, and depicts the mind in those moments of repose or agitation, of tenderness or sublime emotion, which manifest its thirst for a more powerful and joyful existence. To a man of a literal and prosaic character, the mind may seem lawless in these workings; but it observes higher laws than it transgresses, the laws of the immortal intellect; it is trying and developing its best faculties; and in the objects which it describes, or in the emotions which it awakens, anticipates those states of progressive power, splendour, beauty, and happiness, for which it was created. We accordingly believe that poetry, far from injuring society, is one of the great instruments of its refinement and exaltation. It lifts the mind above ordinary life, gives it a respite from depressing cares, and awakens the consciousness of its affinity with what is pure and noble. In its legitimate and highest efforts it has the same tendency and aim with Christianity; that is, to spiritualize our nature. True, poetry has been made the instrument of vice, the pander of bad passions; but, when genius thus stoops, it dims its fires, and parts with much of its power; and, even when poetry is enslaved to licentiousness or misanthropy, she cannot wholly forget her true vocation. Strains of pure feeling, touches of tenderness, images of innocent happiness, sympathies with suffering virtue,



IN GREECE AND ROME IT WAS THE PRACTICE TO CROWN THE SUCCESSFUL POETS IN THE MUSICAL CONTESTS WITH A WREATH OF LAUREL.

DOMITIAN CROWNED WITH HIS OWN HANDS POETS AND ORATORS, AT THE CAPITOLINE GAMES, WHICH HAD BEEN INSTITUTED BY HIM.

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bursts of scorn or indignation at the hollowness of the world, passages true to our moral nature, often escape in an immoral work, and show us how hard it is for a gifted spirit to divorce itself wholly from what is good. Poetry has a natural alliance with our best affections. It delights in the beauty and sublimity of the outward creation and of the soul. It indeed pourtrays with terrible energy the excesses of the passions; but they are passions which show a mighty nature, which are full of power, which command awe, and excite a deep though shuddering sympathy. Its great tendency and purpose is, to carry the mind above and beyond the beaten, dusty, weary walks of ordinary life; to lift it into a purer element, and to breathe into it more profound and generous emotion. It reveals to us the loveliness of nature, brings back the freshness of youthful feeling, revives the relish of simple pleasures, keeps unquenched the enthusiasm which warmed the spring-time of our being, refines youthful love, strengthens our interest in human nature by vivid delineations of its tenderest and loftiest feelings, spreads our sympathies over all classes of society, knits us by new ties with universal being, and through the brightness of its prophetic visions, helps faith to lay hold on the future life. We are aware that it is objected to poetry, that it gives wrong views and excites false expectations of life, peoples the mind with shadows and illusions, and builds up imagination on the ruins of wisdom. That there is a wisdom against which poetry wars—the wisdom of the senses—which makes physical comfort and gratification the supreme good, and wealth the chief interest of life, we do not deny; nor do we deem it the least service which poetry renders to mankind, that it redeems them from the thraldom of this earthborn prudence. But, passing over this topic, we should observe that the complaint against poetry as abounding in illusion and deception is in the main groundless. In many poems there is more of truth than in many histories and philosophic theories. The fictions of genius are often the vehicles of the sublimest verities, and its flashes often open new regions of thought, and throw new light on the mysteries of our being. In poetry the letter is falsehood, but the spirit is often profoundest wisdom. And, if truth thus dwells in the boldest fictions of the poet, much more may it be expected in his delineations of life; for the present life, which is the first stage of the immortal mind, abounds in the materials of poetry, and it is the high office of the bard to detect this divine element among the grosser labours and pleasures of our earthly being. The present life is not wholly prosaic, precise, tame, and finite. To the gifted eye it abounds in the poetic. The affections which spread beyond ourselves and stretch far into futurity; the workings of mighty passions, which seem to arm the soul with an almost superhuman energy; the innocent and irrepressible joy of infancy; the bloom, and buoyancy, and dazzling hopes of youth; the throbbings of the heart, when it first wakes to love, and dreams of a happiness too vast for earth; woman, with her beauty, and grace, and gentleness, and fulness of feeling, and depth of affection, and her blushes of purity, and the tones and looks which only a mother's heart can inspire;—these are all poetical. It is not true that the poet paints a life which does not exist. He only extracts and concentrates, as it were, life's ethereal essence, arrests and condenses its volatile fragrance, brings together its scattered beauties, and prolongs its more refined but evanescent joys; and in this he does well; for it is good to feel that life is not wholly usurped by cares for subsistence and physical gratifications, but admits, in measures which may be indefinitely enlarged, sentiments and delights worthy of a higher being."

POINT, in geometry, as defined by Euclid, is a quantity which has no parts, or which is indivisible. Points are the ends or extremities of lines. If a point be supposed to be moved any way, it will, by its motion, describe a line.——*Point*, in astronomy, a term applied to a certain place marked in the heavens, or distinguished for its importance in astronomical calculations. The four grand points or divisions of the horizon, viz. the east, west, north, and south, are called the *cardinal points*. The zenith and nadir are the *vertical points*; the points where the orbits of the planets cut the plane of the ecliptic, are called the *nodes;* the points where the equator and ecliptic intersect are called the *equinoctial points;* that whence the sun ascends towards the north pole, is called the *vernal point;* and that by which he descends to the south pole, the *autumnal point*. The points of the ecliptic, where the sun's ascent above the equator, and descent below it, terminate, are called the *solstitial point*.——*Point*, in geography, a small cape or headland, jutting out into the sea: thus seamen say, two points of land are in one another, when they are so completely in a right line against each other, as that the innermost is hidden by the outermost.——*Point*, in optics, a term applied on several occasions to the rays of light: viz. the *point of dispersion*, wherein the rays begin to diverge: the *point of incidence*, that point upon the surface of a glass, or any body, on which a ray of light falls: *point of reflection*, the point from which a ray is reflected: *point of refraction*, that point in the refracting surface where the refraction is effected.——*Point*, among artists, an iron or steel instrument used for tracing designs on copper, wood, stone, &c. ——In modern music, a dot placed by a note to raise its value or prolong its time one-half, so as to make a semibreve equal to three minims; a minim equal to three quavers, &c.——*Point*, in poetry, a lively turn or expression that strikes with agreeable surprise; such as is usually found or expected at the close of an epigram.——In heraldry, *points* are the several different parts of the escutcheon, denoting the local positions of figures.——*Point-blank*, in gun-



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nery, denotes the shot of a gun levelled horizontally. The *point-blank range* is the extent of the apparent right line of a ball discharged. In shooting point-blank, the ball is supposed to move directly to the object, without a curve.——*Points*, in grammar, certain characters used to mark the divisions of writing, or the pauses to be observed in reading or speaking; as the comma (,) semicolon (;) colon (:) and period (.) also the points of interrogation (?) and admiration (!)——*Pointing*, the art of dividing a discourse, by points, into periods and members of periods, in order to show the proper pauses to be made in reading. ——*Point of sight*, in perspective, a point on a plane marked out by a right line drawn from the perpendicular to the plane. ——The word *point* has various other significations. Thus we say "we have gained our *point*;" "he has reached the highest *point* of excellence;" "my friend is at the *point* of death;" "all *points* of dispute are given up," &c.

POINTER, among sportsmen, a dog used in finding partridges, pheasants, and other feathered game. Though the pointer is not a native of England, it has been long since naturalized here. Johnson, in his Shooter's Companion, observes, that from judicious crossing, by the fox-hound with the Spanish pointer, excellent dogs are to be met with in most parts of England. They differ from the setter, as when they have approached sufficiently near the game, they stand erect, whereas the true-bred setter will either sit upon his haunches, or lie close to the ground, generally the latter. Pointers are very susceptible of education; and their speed, strength, and persevering spirit, enable them to continue the chase for a length of time almost incredible.

POI'SON, a substance which by its chemical action, or re-action, when taken into the stomach, mixed with the blood, or applied to the flesh, disturbs or suspends the circulations and functions necessary to life. Some destroy the parts, as arsenic and corrosive sublimate; others destroy the elasticity of the stomach; others create decomposition by their active putrescence; and others affect the medullary system, as narcotics, and suspend the energy of the brain; but they act variously upon different animals.—When mineral poisons have been recently swallowed, a scruple or two of ipecacuanha will sometimes suffice as an emetic; but if this should not operate, twelve grains of white vitriol should be given to adults. Where narcotic poisons have been swallowed, as opium, henbane, hemlock, &c., the person must not, on any account, be allowed to sleep, but be obliged to drink plentifully of mucilaginous fluids, vinegar, strong coffee, &c. If arsenic, preparations of mercury, lead, &c. have been swallowed some time, and violent pain produced in the stomach, great anxiety, sickness, vomiting, griping, with a burning pain in the throat: in such cases a solution of soap in the proportion of one pound of soap to four pounds or pints of water should be drank pretty plentifully.—We may remark, by way of conclusion, that poisons are only deleterious in certain doses; for many of the most active, in small doses, form the most valuable medicines.

POLA'CRE, a vessel with three masts, used in the Mediterranean. The masts are usually of one piece, so that they have neither tops, caps, nor cross trees, nor horses to their upper yards.

POLARITY, that quality of a body in virtue of which peculiar properties reside in certain points; special direction, according to some governing law, as in magnetism, light, &c. A mineral is said to possess *polarity* when it attracts one pole of a magnetic needle and repels the other.

POLARIZATION OF LIGHT, in physics, a change produced upon light by the action of certain media, by which it exhibits the appearance of having *polarity*, or poles possessing different properties. The knowledge of this singular property of light has afforded an explanation of several intricate phenomena in optics.

POLE, in astronomy, the extremity of the axis of the earth, an imaginary point on the earth's surface, of which there are two, namely, the *Arctic* or North Pole, and the *Antarctic* or South Pole.——*Poles of the ecliptic*, are two points on the surface of the sphere, 23° 30′ distant from the poles of the world.——*Magnetic poles*, two points of a loadstone, corresponding to the poles of the world; the one pointing to the north, the other to the south.——*Pole*, in spherics, a point equally distant from every part of the circumference of a great circle of the sphere; it is a point of 90° distant from the plane of a circle, and in a line passing perpendicularly through the centre, called the axis. Thus the zenith and nadir are the *poles* of the horizon.

PO'LE-AXE, a kind of hatchet with a short handle, and a point or claw bending downward from the back of its head. It is principally used at sea, to cut away the rigging of the enemy attempting to board; sometimes it is thrust into the side of a ship to assist in boarding an enemy's ship, and called a *boarding-axe*.

PO'LECAT, in zoology, an animal of the genus *Mustela*, or weasel tribe, which emits a most fetid stench when pursued. It inhabits Europe and Asiatic Russia.

POL'EMARCH, in antiquity, an Athenian magistrate whose duty it was to take care that the children of such as lost their lives in their country's service were maintained out of the public treasury. He had also the care of sojourners and strangers in Athens; his authority over them being equal to that of the archon over the citizens.

POLEMICS, controversial writings, particularly applied to controversies on matters of divinity.

POLEMOSCOPE, in optics, an oblique perspective glass, or *diagonal opera-glass*, contrived for seeing objects that do not lie directly before the eye. It consists of a concave glass, placed near a plane mirror in the end of a short round tube, and a



IT WAS FORMERLY BELIEVED, THOUGH ERRONEOUSLY, THAT ALL POISONOUS MATTERS COULD BE THROWN OUT OF THE BODY BY PERSPIRATION.

MOST POISONS OPERATE PRINCIPALLY BY A POWERFUL ACTION UPON THE NERVES, AND A RAPID DESTRUCTION OF THEIR ENERGY

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convex glass in a hole in the side of the tube.

POLE-STAR, or POLAR STAR, in astronomy, a star of the second magnitude, the last in the tail of Ursa Minor, which is nearly vertical to the pole of the earth. Owing to its proximity, it never sets; it is therefore of great use to navigators in the northern hemisphere, in determining the latitudes, &c.

POLICE, the internal regulation of a kingdom, city, or town. In its most popular acceptation, the *police* signifies the administration of the municipal laws and regulations of a city or incorporated town or borough; as the *police* of London, of Birmingham, &c.——Those who are employed in thus administering to its peace and good government are termed *police-officers*.

POLICY, in commerce, a written instrument containing the terms or conditions on which a person or company undertakes to indemnify another person against losses of property exposed to peculiar hazards, as fire, losses by sea, &c. [See INSURANCE.]

POLITENESS, polished manners, or that conduct towards others which good will in the first place, and good sense in the second, imperiously dictates. It unites gracefulness and gentility of behaviour with an obliging willingness to conform to the wants and wishes of others.

POLITICAL ARITHMETIC, the art of making arithmetical calculations on matters relating to a nation, its revenues, value of lands and effects, produce of lands or manufactures, population, and the general statistics of a country.

POLITICAL ECONOMY, the science which treats of the administration of the revenues of a nation; or the management and regulation of its resources and productive property and labour. It is a term of very comprehensive meaning, and includes all the measures by which the property and labour of citizens are directed in the best manner to the success of individual industry and enterprise, and to the public prosperity.

POLITICS, in its most extensive sense, is the theory and practice of obtaining the ends of civil society; or the regulation and government of a nation or state, for the preservation of its safety, peace, and prosperity. Politics is necessarily divided into two branches; the one regarding a state in all its relations with other states, and the other its internal arrangements, or *polity*, and which includes what is frequently called its *domestic economy*, viz. the augmentation of its strength and resources, and the protection of its citizens in their rights, with the preservation and improvement of their morals.

POLL, in elections, the register of those who give their vote, containing their name, place of residence, &c. Also the place where the votes are registered; as "we are going to the *poll*;" "several electors were unable to get to the *poll*," &c.

POLLEN, in botany, the farina or the fructifying powder communicated by the anther of flowers on the pistil.

POLLENIN, in chemistry, a substance prepared from the pollen of tulips, highly inflammable, and insoluble in agents which dissolve other vegetable products. It is soon subject to putrefaction on being exposed to the air.

POLLUX, in astronomy, a fixed star of the second magnitude in the constellation Gemini, or the Twins.

POLONAISE, a robe or dress, sometimes worn by ladies, which is adopted from the fashion of the Poles.

POLONESE, the Polish language.

POLONOISE, in music, a movement of three crotchets in a bar, with the rythmical cesura on the last.

POLVERINE, in chemistry, the calcined ashes of a plant, of the nature of pearl-ashes, brought from the Levant and Syria. In the manufacture of glass it is preferred to other ashes, as the glass made with it is perfectly white.

POLY, a Greek prefix to many of our words, signifying *many*; as in *polygon*, a figure of many angles.

POLYACOUSTIC, an epithet applied to that which multiplies or magnifies sound.

POLYADELPHIA, in botany, the 18th class of the Linnæan system of plants; containing four orders, *pentandria*, *dodecandria*, *icosandria*, and *polyandria*, with the stamens united into three or more bodies by the filaments.

POLYANDRIA, in botany, the 13th class of the Linnæan system of plants; containing seven orders, *monogynia*, *digynia*, *trigynia*, *tetragynia*, *pentagynia*, *hexagynia*, and *polygynia*. The number of the stamens distinguishes this class from the first eleven classes; their situation on the receptacle separates it from the 12th class, *Icosandria*; and their distinctness from each other is the mark by which this class is known from the *Monadelphia* and the *Polyadelphia*

POLYANTHUS, in botany, a plant of the genus *Primula*, or primrose, whose flower-stalks produce flowers in clusters.

POLYANTOGRAPHY, the act or practice of multiplying copies of one's own hand-writing, by engraving on stone; a species of lithography.

POLYCHROITE, in chemistry, the colouring matter of saffron.

POLYCOTYLEDON, in botany, a plant that has many cotyledons or lobes to the seed.

POLYGONUM, in botany, a genus of plants, class 8 *Octandria*, order 3 *Trigynia*. The species are shrubby perennials.

POLYGAMIA, the 23rd class of the Linnæan system of plants; containing three orders, *monoecia*, *dioecia*, and *trioecia*, with perfect flowers, accompanied with one or both sorts of imperfect flowers.

POLYGAMY, a plurality of wives or husbands at the same time. In some countries, as in Turkey for instance, polygamy is allowed; but by the laws of England, polygamy is made felony, except in



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ALMOST THE ENTIRE CLASS OF POLYPI ARE ATTACHED BY THEIR STEM, OR BASE, TO SUBMARINE ROCKS OR OTHER EXTRANEOUS BODIES.

the case of absence beyond the seas for seven years. Polygamy prevailed among the Jewish patriarchs, both before and under the Mosaic law; but the state of manners had probably become reformed in this respect before the time of Christ, for in the New Testament we meet no trace of its practice. Polygamy has been allowed under all the religions which have prevailed in Asia. By the laws of Mohammed, every Mussulman is permitted to have a plurality of wives: the Arabs, however, seldom avail themselves of this privilege. The ancient Romans never practised it, though it was not forbidden among them; and Mark Antony is mentioned as the first who took the liberty of having two wives. From that time it became frequent in the Roman empire, till the reigns of Theodosius, Honorius, and Arcadius, who prohibited it A. D. 393.

POL'YGAR, in Hindostan, an inhabitant of the woods.

POLY'GENOUS, consisting of many kinds; an epithet used in mineralogy, as a *polygenous* mountain, one composed of strata of different species of stone.

POL'YGLOTT, a book containing many languages; as the Polyglott Bible, a bible printed in several languages.

POL'YGON, in geometry, a figure with many sides, or whose perimeter consists of more than four sides. Every polygon may be divided into as many triangles as the figure has sides, and may of course be easily measured.——*Polygonal numbers*, are so called because the units whereof they consist may be disposed in such a manner as to represent several regular polygons.

POLYG'ONUM, in botany, knotgrass, a genus of plants so named from the numerous joints in the stem.

POL'YGRAM, a figure consisting of many lines.

POL'YGRAPH, an instrument for multiplying copies of a writing with ease and expedition.

POLYG'RAPHY, the art of writing in various ciphers, and deciphering the same.

POLYGYN'IA, in botany, one of the Linnæan orders, containing plants the flowers of which have many pistils.

POLYHAL'LITE, a mineral or salt occurring in masses of a fibrous structure, of a brick red colour, being tinged with iron. It contains sulphate of lime, of magnesia, potash and soda.

POLYHE'DRON, in geometry, a body or solid comprehended under many sides or planes.——In optics, a multiplying glass or lens consisting of several plane surfaces disposed in a convex form.

POLYM'ATHY, the knowledge of many arts and sciences. Hence a person who is acquainted with many branches of learning is styled a *polymath*.

POLYMIG'NITE, the name of a mineral recently found in Norway. It is black, brilliant, and crystalized in small prisms.

POLYMORTH, in conchology, a name given by Soldani to a numerous series of shells, of a small and irregular form, which cannot be referred to any known genus.

POLYNEME, in ichthyology, a fish having a scaly compressed head, with a blunt prominent nose, and folding appendages to the pectoral fins.

POLYNE'SIA, in geography, a term of modern invention, used to designate a great number of islands in the Pacific ocean, as the Sandwich, Friendly, and Society isles, the Carolines, Ladrones, &c.

POLYNOME, in algebra, a quantity consisting of many terms.

POLYOPTRUM, in optics, a glass through which objects appear multiplied.

POLYPETALOUS, in botany, having many petals.

POLYPH'ONY, or POLYPH'ONISM, multiplicity of sounds, as in the reverberation of an echo.

POLYPH'YLLOUS, in botany, many-leaved; as, a *polyphyllous* calyx or perianth.

POLYPO'DIUM, in botany, a genus of plants in the Linnæan system, class 24 *Cryptogamia*, order 2 *Filices*.

POLYP'ODY, in botany, a plant of the genus *Polypodium*, of the order of *Filices* or ferns. There are numerous species, of which the most remarkable is the common male fern.

POL'YPUS, or POL'YPE, a species of fresh-water insect belonging to the genus *Hydra*, and order of *Zoophytes*. It inhabits the stagnant waters of Europe, and is remarkable for the property that if cut into several parts, each part will shoot out a new head and tail, and thus become a perfect animal. The bodies of these animals appear only a homogeneous mass, constituted of a gelatinous and irritable cellular tissue, in which the vital fluids move in a slow and protracted course. The whole of this extensive class are provided with an internal cavity or stomach, and some of them with indistinct traces of hollow canals or ovaries. The body is usually of a cylindrical or conical form, of a gelatinous or transparent texture; the mouth is the only opening, and is surrounded with tentacula, varying in form and number. Numerous and more extraordinary facts than it is here possible to relate, respecting its multiplication by the division of its parts, and particularly the possibility of engrafting one polype upon another, belong to this animal. In the lowest races of polypi, the distinctive characters of animal life are so slightly developed, that there is much difficulty in distinguishing them from the cryptogamic families of the vegetable kingdom. The resemblance in these plants to animals consists in this, that from the egg is formed a bulb, which shoots up into a stem, and sends off branches; there is also a root, which, however, is merely the organ of attachment, affording no nourishment to the animals. Being thus immovably fixed to a particular spot, they have no other means of providing themselves with food, but by their long tentacula. Certain species of polype are usually found in ditches. Whoever will carefully examine these when the sun is very powerful, will

DURING THE WHOLE TIME A POLYPE IS EXPANDED, A CONSTANT CURRENT OF WATER IS DIRECTED TOWARDS ITS MOUTH.



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see many little transparent lumps, of the appearance of a jelly, and size of a pea, and flatted upon one side. The same kind of substances are likewise to be met with on the under sides of the leaves of plants which grow in such places. These are the polypes in a quiescent and apparently inanimate state. They are generally fixed by one end to some solid substance, with a large opening, which is the mouth, at the other; having several arms fixed round it, projecting as rays from the centre. In contemplating the structure of the polypi, we find their nutritive organs the simplest of all possible forms; consisting of a mere stomach adapted to receive and digest food, without any other apparent organ, being destitute of brain, nerves, or organs of sense; nor is there the slightest appearance of any thing corresponding to lungs, heart, or even vessels of any kind. The researches of Trembley have brought to light the extraordinary fact, that not only the internal surface of the polypus is endowed with the power of digesting food, but that the same property belongs also to the external surface, or what we might call the skin of the animal. He found that by a dexterous manipulation, the hydra may be completely turned inside out, like the finger of a glove, and that the animal, after having undergone this singular operation, will very soon resume all its ordinary functions, just as if nothing had happened. It accommodates itself in the course of a day or two to the transformation, and resumes all its natural habits, eagerly seizing animalcules with its tentacula, and introducing them into its newly-formed stomach, which has for its interior surface what before was the exterior skin, and which digests them with perfect ease.—Still more complicated are the forms and economy of the aggregated polypi, which prolific nature has spread in countless multitudes over the rocky shores of the whole globe. These grow in the form of plants, and are supported on one common stem, with widely extending flowering branches. These many headed monsters present myriads of open mouths, each surrounded by single or numerous rows of tentacula, which are extended to catch their prey; these are provided with a multitude of cilia, which, by their incessant vibrations, determine currents of water to flow towards their mouths, carrying with them the floating animalcules on which the entire mass of polypi subsists.——The name given to the habitations of polypes, or to the common part of those compound animals, is *polypier*; and a fossil polype is called a *polypite*.——*Polypus*, in ichthyology, a sea-fish, resembling the cuttle-fish, so called because it has numerous feet.——*Polypus*, in surgery, a fleshy tumour, commonly met with in the nose, that abounds in ramifications, from which it derives its name.

POLYSPERM'OUS, in botany, an epithet for such plants as have more seeds than four succeeding each flower, without any certain order.

POLYSYL'LABLE, in grammar, a word consisting of more syllables than three; for when a word consists of one, two, or three syllables, it is called a monosyllable, dissyllable, and trisyllable.

POLYSYN'DETON, in grammar and rhetoric, a figure in which a redundance of conjunctions, especially copulative ones, is used; as, "we have armies and fleets and gold and stores—all the sinews of war."

POLYTECH'NIC, an epithet denoting or comprehending many arts; as, a *polytechnic school*; the *Polytechnic Gallery*.—The Polytechnic School, in France, was established by a decree of the national convention of March 11th, 1794, which was passed by the influence of Monge, Carnot, Fourcroy, &c. "The committee of public safety had seen the necessity of providing for the education of engineers. The school was first called *ecole centrale des travaux publics*, which name was changed a year after. Men like Lagrange, Laplace, Berthollet, Fourcroy, and many other distinguished individuals, were its professors. It is now established in the buildings of the ancient college of Navarre. Napoleon did much for it, and under him it received considerable modifications. The pupils were obliged to live in the building, and wear a uniform. Its object is to diffuse a knowledge of the mathematical, physical, and chemical sciences, and to prepare the pupils for the artillery service and the various departments of engineering, military, naval, and civil. The number of pupils is limited to 300. The terms for the students not supported on the foundation are 1000 francs a year, independent of the expense of uniform and books. The pupil, at the time of admission, must be more than sixteen and less than twenty years old. The course of studies lasts two years, in certain cases three. A rigorous examination precedes admission, and another examination takes place before the pupils leave the institution, and it is invariably attended by the greater number of the marshals of France, together with many of the most distinguished scholars; 'and,' says an English writer, 'the replies of the pupils might well astonish a senior wrangler of Cambridge, or a medallist of Dublin!' The origin of this establishment, and the high character of the course of instruction, has always inspired the students with a warm love of their country. March 30th, 1814, they fought bravely against the allies. In April, 1816, the school was abolished, the students appearing not sufficiently devoted to the Bourbons, who, however, were obliged to re-establish it in September of the same year. In the revolution of July, 1830, the students immediately took part with the people, and were of the greatest use, as well by their military knowledge as by their heroic enthusiasm; and several of the most important attacks during those memorable days were conducted by these youths."

POLYTH'EISM, the doctrine and worship of a plurality of gods: opposed to *monotheism*, or the belief in one Supreme Being.



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POMA'CEÆ, the 36th Linnæan natural order of plants, having an esculent pulpy root; as the apple, &c.

POMA'TUM, a compound of lard and rose-water, an unguent used in dressing the hair.

POM'EGRANATE, in botany, the fruit of a tree belonging to the genus *punica*. It is as large as an orange, of a reddish colour, having a hard rind filled with a soft pulp and numerous seeds.

POMŒ'RIUM, in antiquity, a space of ground both within and without the walls, which the augurs consecrated on the first building of any city.

POMIF'EROUS, apple-bearing; an epithet applied to plants which bear the larger kinds of fruits, such as melons, gourds, &c. in distinction from the *bacciferous* or berry-bearing plants.

POMOL'OGY, that branch of gardening which is directed principally to the cultivation of fruit-trees, shrubs, &c. In Germany and France there exist many pomological societies, upon a similar principle to our horticultural societies, though the former, as the name implies, direct their attention chiefly to the cultivation of fruits.

POM'PA CIRCEN'SIS, or CEREA'LIS, in antiquity, a procession exhibited at the *Ludi Cereales* of the Romans, consisting of a solemn march of the persons who were to engage in the exercises of the circus, attended by the magistrates and ladies of quality; the statues of the gods and illustrious men being carried along in state on waggons called *thensæ*.

POM'PHOLYX, in chemistry, the white oxyde which sublimes during the combustion of zinc; called *flowers of zinc*.

PO'MUM ADAMI, or ADAM'S APPLE, in anatomy, the name of a protuberance in the anterior part of the neck, so named from the whimsical supposition that a part of the forbidden fruit of which Adam ate stuck in his throat, and thus caused the protuberance.

PON'GO, in zoology, a name applied by Cuvier to the largest species of ape known, which inhabits Borneo, and resembles the orang-outang in its general form and erect position, but has the cheek-pouches and lengthened muzzle of the baboon.

PONTEE', in glass-works, an iron instrument used to stick in the glass at the bottom, for more conveniently fashioning the neck of it.

PON'TIFEX, among the Romans, was one of the order of Pontifices, who had the superintendance and direction of divine worship in general. The Pontifices were erected into a college consisting of fifteen persons, of whom the eight first had the title of *Majores*, and the seven others of *Pontifices Minores*. They made together but one body, the chief of which was called *Pontifex Maximus*.

PON'TIFF, the high or chief priest in the Romish and Greek churches. The ancient Romans had a college of *pontiffs*; the Jews had their *pontiffs*; and the pope is called a *sovereign pontiff*.——The word *pontificate* is used for the state or dignity of a pontiff, or high priest; but more particularly for the reign of a pope.

PONTIFICA'LIA, the robes in which a bishop performs divine service.

PONTOON'S, or PONTOON BRIDGE, a floating bridge, formed of flat-bottomed boats, anchored or made fast in two lines, and used in forming bridges over rivers for the passage of armies.——*Pontoon carriage*, a vehicle formed of two wheels only, and two long side pieces, whose fore-ends are supported by timbers.

PONT-VOLANT', in military affairs, a kind of bridge used in sieges for surprising a post or outwork that has but narrow moats. It is composed of two small bridges laid one above the other, and so contrived that, by the aid of cords and pullies, the upper one may be pushed forward till it reaches the destined point.

POOR, POOR LAWS. [See PAUPERISM.]

POPÆ, in Roman antiquity, certain officers of inferior rank who assisted the priests at sacrifices.

POPE (*papa*, father), the head of the Roman Catholic church. The appellation of *pope* was anciently given to all Christian bishops; but about the latter end of the eleventh century, in the pontificate of Gregory VII. it was usurped by the bishop of Rome, whose peculiar title it has ever since continued. The spiritual monarchy of Rome sprung up soon after the declension of the Roman empire. The bishops of Rome affect to owe their origin to the appointment of St. Peter, who was considered as transferring the keys of heaven (figuratively consigned to his keeping), to these bishops as his successors; hence they assumed a supremacy which was admitted by all the Western Christians, but resisted by the Eastern ones, who in Greece, Turkey, and Russia, have a separate Greek church. The vices of the clergy led, however, in the 14th and 15th centuries, to schisms; and a personal quarrel between the pope and Henry VIII. induced the latter to assume the title of the Head of the Anglican Church, as well as to recognise the principles of the Reformers, which were adopted by many German princes, and the Northern sovereigns. The pope retains his spiritual ascendancy throughout Italy, France, Austria, Spain, and Portugal; and four-fifths of the Irish are Catholics. He is also regarded as a sovereign in certain provinces contiguous to Rome.

POP'LAR, in botany, a tree of the genus *Populus*, of which there are eleven species. 1. The abele; 2. the white poplar; 3. the black poplar; 4. the aspen-tree, or trembling poplar; 5. the balsamifera, or Carolina poplar; 6. the tacamahaca of Canada, &c. The wood of the abele, in particular, is recommended for flooring. Of the black poplar, the inner bark is used in Kamschatka for bread; and the cottony down of the seeds has been made into paper. The resin of the tacamahaca is employed in



THE POPE IS STYLED "HIS HOLINESS," "THE HOLY FATHER," AND SOMETIMES IN HISTORY "THE SOVEREIGN PONTIFF."

THE OPPOSITE CLASSES OF RICH AND POOR PROVE, THAT FOR ALL OPPRESSIVE EXPENDITURE, THERE MUST BE EQUIVALENT PRIVATION.

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medicine. The Lombardy poplar yields a dye of as fine a lustre, and equally durable, as that of the finest yellow wood, and its colour is more easily extracted.

POP'LIN, in commerce, a kind of fine-woven stuff made of silk and worsted.

POP'PY, in botany, a plant of the genus *Papaver*, of several species, from one of which, the *somniferum*, or white poppy, opium is collected. [See OPIUM.]

POP'ULAR, enjoying the favour of the great body of the people; as, a *popular* ministry. Also, whatever pertains to the common people; as the *popular* voice.—— In law, a *popular* action is one which gives a penalty to the person that sues for the same.

POPULA'RES, the name of a party at Rome, who struggled to ingratiate themselves with the people, and, by extending *their* influence and power, to increase their own. The *Populares* were opposed to the *Optimates*. [See OPTIMATES.]

POPULARITY, the state of possessing the affections and confidence of the people in general. "The man whose ruling principle is duty, is never perplexed with anxious corroding calculations of interest and *popularity*."

POPULA'TION, the aggregate number of people in any country. Owing to the increase of births above that of the deaths, the population is continually increasing in most parts of the habitable world. "Countries," says Adam Smith, in his Wealth of Nations, "are populous, not in proportion to the number of people whom their produce can clothe and lodge, but in proportion to that of those whom it can feed."——The following Table gives, at a glance, the

POPULATION OF ENGLAND AND WALES, from the Year 1700 to 1831.

| Year. | No. of Persons. | Year. | No. of Persons. |
|---|---|---|---|
| 1700 . . | 5,475,000 | 1770 . . | 7,428,000 |
| 1710 . . | 5,340,000 | 1780 . . | 7,953,000 |
| 1720 . . | 5,565,000 | 1790 . . | 8,675,000 |
| 1730 . . | 5,796,000 | 1801 . . | 9,168,000 |
| 1740 . . | 6,064,000 | 1811 . . | 10,502,500 |
| 1750 . . | 6,467,000 | 1821 . . | 12,218,500 |
| 1760 . . | 6,736,000 | 1831 . . | 14,594,500 |

GENERAL SUMMARY, 1831.

| | |
|---|---|
| England . . . | 13,089,336 |
| Wales . . . | 805,236 |
| Scotland . . . | 2,365,807 |
| Army and Navy . . . | 277,017 |
| Total . . | 16,537,396 |

SCOTLAND.

| Years . . | 1801 | 1811 | 1821 | 1831 | No. of Persons. |
|---|---|---|---|---|---|
| Number of Persons | 1,652,400 | 1,865,900 | 2,135,300 | 2,365,807 | Edinburgh, City of, in 1831 . . 162,403 |

IRELAND.

| Years . . . . . | 1821 | 1831 |
|---|---|---|
| Number of Persons . . . | 6,846,949 | 7,767,401 |

THE METROPOLIS.

| POPULATION IN THE YEARS | 1700 | 1750 | 1801 | 1811 | 1821 | 1831 |
|---|---|---|---|---|---|---|
| City of } Within the Walls . . | 139,300 | 87,000 | 78,000 | 57,700 | 58,400 | 57,695 |
| London } Without the Walls . . | 69,000 | 57,300 | 56,300 | 68,000 | 72,000 | 67,878 |
| City and Liberties of Westminster | 130,000 | 132,000 | 165,000 | 168,600 | 189,400 | 202,080 |
| Parishes within the Bills of Mortal. | 326,900 | 357,600 | 477,700 | 593,700 | 730,700 | 852,849 |
| Ditto not within the Bills of Mortal. | 9,150 | 22,350 | 123,000 | 162,000 | 224,300 | 293,567 |
| Total . . | 674,350 | 676,250 | 900,000 | 1,050,000 | 1,274,800 | 1,474,069 |

Increase per cent. of the Population at periods between 1700 and 1831:—

| | | | |
|---|---|---|---|
| Between 1801 & 1811 . . . | 14 per cent. | Between 1821 & 1831 . . . | 14 per cent. |
| 1811 & 1821 . . . | 17¾ —— | 1700 & 1831 . . . | 135 —— |

But the increase of the 40 counties of England, taken together since 1700, has been 154 per cent.; that of the 12 counties of Wales only 117 per cent. during the same period.

POR'CELAIN, a fine sort of earthenware, originally manufactured in China, and thence called *china-ware*. The combination of silex and argil is the basis of porcelain; and, with the addition of various proportions of other earths, and even of some metallic oxydes, forms the different varieties of pottery, from the finest porcelain to the coarsest earthen-ware. Though siliceous earth is the ingredient which is present in large proportion in these compounds, yet it is the argillaceous which more particularly gives them their character, as it communicates ductility to the mixture when soft, and renders it capable of being turned into any shape on the lathe, and of being baked. *Porcelains* differ much in their fineness and beauty. Under the head "CHINA-WARE," and again in the article "EARTHEN-WARE," we have given somewhat detailed accounts of the materials and modes of manufacturing them. We will here add a description of the manufacture of the *Worcester porcelain*:—The siliceous and other substances are first pulverized by an iron roller which weighs upwards of two tons, and revolves in a groove not unlike that of a cider-mill; after this they are calcined, and then ground at the water-mill, sufficiently fine to filter through sieves, through which no particle of greater dimensions than the

THE DEMAND FOR MEN, LIKE THAT FOR ANY COMMODITY, NECESSARILY REGULATES AND DETERMINES THE STATE OF PROPAGATION.

THE LIBERAL REWARD OF LABOUR NATURALLY TENDS TO WIDEN AND INCREASE THE POPULATION OF ANY COUNTRY.



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57,000th part of an inch can pass. The composition then, in its liquid state, is dried upon the slip-kilns till it becomes of the consistency of clay, when it is taken to the throwing-room, where the ware is first formed; and from thence to the store-room, in which it is placed to dry gradually, thus preparing it for turning and pressing. The articles being applied to the latter, are diminished in thickness about one-half; the ware is then put into the first set of kilns, called "biscuit kilns," in which it is burned nearly sixty hours. Having passed through these kilns, such pieces as have been warped by too great heat, are reburned in the second. After this the articles are prepared for receiving their glazing, which accomplished, they are a third time committed to the fire,—and when the glaze is sufficiently vitrified they are taken out, and when cool receive their finest embellishment in the painting-room; they are then a fourth time condemned to the furnace, for the purpose of incorporating the gilding and the colours with the glaze, after which they are burnished for the market.

POR'CELAIN-SHELL, in ichthyology, a genus of shell-fish, with a simple shell without any hinge, formed of one piece, and of a gibbous figure on the back: the mouth is long, narrow, and dentated on each side; and the animal inhabitant is a limax.

POR'CELLANITE, a species of jasper, a siliceous mineral of various colours. It is sometimes marked with vegetable impressions of a brick red colour, and seems to be formed accidentally in coal mines which have indurated and semi-vitrified beds of coal-shale or slate-clay.

PORCH, in architecture, a kind of vestibule supported by columns at the entrance of temples, halls, churches, or other buildings.—By way of distinction, a public portico in Athens, where Zeno the philosopher taught his disciples, was called *the porch*. Hence, *the porch*, in classical literature, is equivalent to the *school of the Stoics*.

POR'CUPINE *(histrix)*, in zoology, a very singular genus of quadrupeds, belonging to the order of the *glires*. The fore-teeth of the porcupine are obliquely truncated, and it has no canine teeth: its ears are of a roundish form, and the body is covered with prickles or spines, and also with bristles like those of a hog. The spines or quills, as they are called, are of two kinds; some being short, thick, strong, and sharp-pointed; others longer, weaker, more flexible, and compressed at the point. These the porcupine is capable of erecting if attacked or in danger; but not of projecting, as is sometimes stated.

POR'CUPINE-FISH, in ichthyology, a fish about fourteen inches long, covered with spines and prickles.

PORE, in anatomy, a small aperture in the skin for perspiration, so fine as to be invisible except by microscopes of great power, and so numerous that thousands of them exist in a small circle. Also, a small spiracle or opening in other substances; as the *pores* in plants.

POR'ISM, a name given by ancient geometers to certain propositions, which partake both of the nature of a problem and a theorem. The *porism* asserts that a certain problem may become indeterminate, and so far it partakes of the nature of a theorem, and in seeking to discover the conditions by which this may be effected, it partakes of the nature of a problem.

POR'PHYRY, in mineralogy, a granular and crystalised mass, the composition and colours of which are various. In its homogeneous ground are disseminated a multitude of little angular and granuliform parts, giving to the whole a speckled appearance. It is very hard, and susceptible of a fine polish.

POR'PHYRY-SHELL, an animal or shell of the genus *Murex*, consisting of one spiral valve. It was from one species of this genus that the liquor producing the celebrated Tyrian purple was produced.

POR'PITE, or POR'PITES, in natural history, a small species of fossil coral of a roundish figure, flattened and striated from the centre of the circumference. It is found immersed in stone, and is known by the name of *hair-button-stone*.

POR'POISE, in ichthyology, a cetaceous fish of the genus *Delphinus*, with a blackish or brown back, thick towards the head, but more slender towards the tail, which is semi-lunar. This fish preys on other fish, and seeks food not only by swimming, but by rooting, like a hog, in the sand and mud.

PORT, a haven, cove, inlet, or recess of the sea; in short, any commodious place situated on the sea-coast, or at the mouth of a river, screened from the wind and the assaults of an enemy, with depth of water sufficient for ships of burden, and where vessels may safely unload their cargoes. The word *port* is generally applied to spacious harbours much resorted to by ships, as the *ports* of London and Liverpool; and they may be either natural or greatly assisted by art.——*Port*, a kind of wine made in Portugal; so called from *Oporto*.

PORTCUL'LIS, in fortification, a machine like a harrow, hung over the gate-way of a fortified town, to be let down in case of surprise, to prevent the entrance of an enemy.

PO'RTER, a kind of malt liquor made of high-dried malt, and characterised by its dark brown colour, its peculiar aromatic flavour, and its tonic and intoxicating qualities. Before the year 1730, the malt liquors in general use in London were ale, beer, and twopenny; and it was customary for the drinkers of malt liquor to call for a pint, or tankard of half-and-half, that is, a half of ale and a half of beer, a half of ale and half of twopenny, or half of beer and half of twopenny. In course of time, it also became the practice to call for a pint, or tankard, of *three threads*, meaning a third of ale, of beer, and of twopenny; and thus the publican had the trouble to go to three casks, and turn three cocks for a pint of

THE PORCUPINE GENERALLY SLEEPS DURING THE DAY, AND ONLY LEAVES ITS BURROW IN THE EVENING, IN SEARCH OF FOOD.

THE PORES OF THE SKIN ARE THE MOUTHS OF SO MANY EXCRETORY VESSELS, WHICH PERFORM AN IMPORTANT FUNCTION IN THE ANIMAL ECONOMY.



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liquor. To avoid this inconvenience and waste, a liquor was made which should partake of the same united flavours of ale, beer, and twopenny, which was called *entire* or entire-butt; and as it was a very hearty and nourishing liquor, it was very suitable for *porters* and other working people: hence it obtained its present name. Some brewers colour their porter with burnt sugar; but in general they concentrate a quantity of their first and best wort to an extract, in an iron pan, and burn this into a *colouring stuff*, whereby they can lay claim to the merit of using nothing in their porter but malt and hops.

PO'RT-FIRE, a composition of saltpetre, sulphur, &c. for setting fire to powder, which is frequently used in preference to a match. It may be either used dry, or moistened with linseed oil.

PORT'GLAIVE, one who formerly carried the sword before a prince or governor.

PO'RTGREVE, or PO'RTREEVE, in former times, the chief magistrate of a port or maritime town. This officer is now styled either mayor or bailiff. According to Camden, the chief magistrate of London was anciently called *portgreve*, but was exchanged by Richard I. for two bailiffs, and these gave place in the reign of John to a mayor.

PO'RTHOLES, the openings or embrasures in the sides of ships of war, through which guns are put.

PO'RTICO, in architecture, a kind of gallery on the ground, supported by columns, where people may walk under cover. Though this word is derived from *porta*, a gate or door, yet it is used for any arrangement of columns which form a gallery.—— The Athenians were curious in their porticos, and the poets and philosophers recited their works, and held their disputations there. Their most famous portico was that called *Pœcile*, which was in fact a picture gallery, adorned with the works of the greatest masters.

PO'RTLAND STONE, a compact kind of sand-stone obtained in the isle of Portland, on the coast of Dorset. It is composed of a coarse grit cemented together by an earthy spar: it will not strike with steel, but makes a violent effervescence with nitric acid.

POSE', in heraldry, a lion, horse, or other beast standing still, with all his four feet on the ground.

POSI'DIUM, or POSID'EON, in ancient chronology, the seventh month of the Athenian year; which consisted of thirty days, answered to the latter part of December and beginning of January, and had its name from a festival in honour of Neptune Posidonius which was during that month celebrated.

POSI''TION, in arithmetic, called also the *rule of false*, because in calculating on several false numbers as if they were true ones, from the differences found therein the number sought is found.——*Position*, in geometry, is a term sometimes used in contradistinction to magnitude: thus a line is said to be given in position, *positione data*, when its situation, bearing, or direction, with regard to some other line is given: on the contrary, a line is given in magnitude, when its length is given, but not its situation.——*Position*, in logic, the ground-work or proposition on which an argument is raised.——*Position*, in dancing, the manner of disposing the feet, with regard to each other.

POS'ITIVE, a term of relation sometimes opposed to *negative*; hence a positive quantity, in algebra, is a real or affirmative quantity, or a quantity greater than nothing. ——*Positive quantities* are designated by the character + prefixed or supposed to be prefixed to them.——*Positive* is used in opposition to *relative* or arbitrary: thus, we say, beauty is no positive thing, but depends on different tastes. It is also used in opposition to *natural*: as, a thing is of *positive* right, meaning that it is founded on a law which depends absolutely on the authority of him who made it.——The word *positive* also means confident, or over-confident.—— *Positive Degree*, in grammar, is the adjective in its simple signification, without comparison, or relation to increase or diminution; as, *good bad*, &c.——*Positive Electricity*, a term applied to bodies supposed to contain more than their natural quantity of electricity. *Positive* electricity being produced by rubbing glass, is called the *vitreous*; *negative* electricity, produced by rubbing amber or resin, is called the resinous.

POSOL'OGY, in medicine, the science or doctrine of preparing and administering doses.

POS'SE COMITA'TUS, in law, the armed power of the county, or the attendance of all persons charged by the sheriff to assist him in the suppression of riots, &c.

POSSES'SION, in law, the holding or occupying of any thing, either *de jure* or *de facto*. Possession *de jure*, is the title a man has to enjoy a thing, though it be usurped and in the actual possession of another; or where lands are descended to a person, and he has not yet entered into them: and possession *de facto*, or actual possession, is where there is an actual and effectual enjoyment of a thing. Long undisturbed possession is presumptive proof of right or property in the possessor.

POSSES'SIVE CASE, in English grammar, the genitive case, or case of nouns and pronouns, which either denotes ownership, as *John's* book (a book belonging to John); or some relation of one thing to another, as *Byron's* admirers (those who admire the writings of Byron).

POST, *after*, a Latin preposition used in composition with several English words, and generally implying a relation of posteriority.

POST, a messenger or carrier of letters; one that goes at stated times to convey the mail and dispatches.——A military station; as, the troops are ordered to defend the *post*.——A public office or employment.—— The name of a sort of writing paper, much used for letters.——*To ride post*, to be employed to carry dispatches and papers, and





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THE EARLY STATUTES FOR THE PROTECTION OF LETTERS, BEFORE MAIL-COACHES WERE INVENTED, STILL APPLY TO THOSE ROADS WHERE THERE ARE NONE.

consequently to ride with speed.——Hence *to travel post*, is to travel expeditiously by the aid of fresh horses taken at certain stations.——*To post*, in book-keeping, to carry accounts from the waste-book or journal to the ledger.

POSTAGE, the duty or charge imposed on letters or parcels conveyed by post. As this charge is now only *one penny* for each letter not exceeding half an ounce in weight, whether conveyed one mile or one hundred, the penny-postage promoters have doubtless earned the lasting gratitude of a numerous class of her majesty's subjects. Some persons, indeed, may imagine that the 10 per cent. which has been added to their assessed taxes detracts a little from the boon; but there are others who, like Cruikshank's aristocratic footmen, "don't know what taxes *is*!" and to such it must be a source of unmixed delight.

POST-DATE, to date after the real time; as to *post-date* a bill or a contract, that is, to date it after the true time of drawing the one or making the other.

POST-DILUVIAN, a person who lived after the flood, or who has lived since that event.

POST-DISSEIZIN, in law, a writ intended to put in possession a person who has been dissesised after a judgment to recover the same lands of the same person, under the statute of Merton.

POSTEA, in law, is the return of a record of the proceedings in a cause after a trial and verdict by writ of *nisi prius*, into the court of common pleas, after a verdict; and there afterwards recorded.

POSTERN, in fortification, a small gate, usually in the angle of a flank of a bastion, or in that of the curtain or near the orillon, descending into the ditch.

POST-HUMOUS, born after the death of a father. Also, published after the death of the author; as *posthumous works*.

POSTIL, a marginal note; originally, a note in the margin of the Bible, so called because written after the text.

POSTLIMINIUM, or POSTLIM'INY, among the Romans, was the return of a person to his own country who had gone to sojourn in a foreign country, or who had been banished or taken by an enemy.—— In the modern law of nations, the right of *postliminy* is that by virtue of which, persons and things taken by an enemy in war, are restored to their former state, when coming again under the power of the nation to which they belonged. But this cannot extend in all cases to personal effects, on account of the difficulty of ascertaining their identity.

POSTMASTER, the officer who has the superintendence and direction of a post-office.——The *postmaster-general* is the chief officer of the post-office department, whose duty is to make contracts for the conveyance of the public mails and see that they are executed, and who receives and is accountable for the moneys arising from the postage of letters, pays the expenses, and superintends the whole.

POST-NOTE, in commerce, a bank note intended to be transmitted to a distant place by the public mail, and made payable to *order*; differing in this from a common bank note, which is payable to the *bearer*.

POST-OFFICE, an establishment for the reception, conveyance, and delivery of letters, &c. Posts were originally intended to serve merely for the conveyance of public dispatches, and of persons travelling by authority of government. But the great convenience it afforded to individuals, particularly as commercial transactions multiplied and extended, to have a safe, regular, and speedy communication between distant parts of the country, induced the government to convert it into a source (and a most unexceptionable source, as it always appeared to us) of public revenue. In 1635, Charles I. erected a letter-office for England and Scotland; but this extended only to a few of the principal roads, the times of carriage were uncertain, and the postmasters on each road were required to furnish horses for the conveyance of the letters at 2½*d.* a mile. The plan did not eventually succeed; but it led to an establishment for the conveyance of letters to all parts of the kingdom, weekly. This was in 1649, under the commonwealth. In 1657, the post-office was established, more after the footing it lately bore, and the rates of postage that were then fixed were continued till the reign of queen Anne. But instead of improving, the post gradually became less expeditious; and in 1784, when a journey from London to Bath was made by the diligences in 17 hours, the post took 40 hours! and on other roads the rate of travelling bore about the same proportion. Under these circumstances, it occurred to Mr. John Palmer, of Bath, comptroller-general of the post-office, that a very great improvement might be made in the conveyance of letters, in respect of economy, as well as of speed and safety, by contracting with the proprietors of the coaches for the carriage of the mail; the latter being bound to perform the journey in a specified time, and take a guard with the mail for its protection. That this plan has worked well, and proved highly beneficial both to the public and the government, every one must admit; and though a snug corner in the mail, once so desirable, must now give way to a place in the rapid railway "train," we are bound to regard it as an old friend who has served us on many an important occasion. The Post Office Act (1839), which recognises the expediency of one uniform postage of One Penny, for all Inland Letters within a certain weight, and without reference to the several distances of their delivery, is now in operation; but in delegating its powers of execution to the Lords of the Treasury, "My Lords" are empowered to alter, fix, reduce, or remit the rate of postage at any time; and also, from time to time, to appoint whether the postage shall be paid by the sender or by the receiver, or either way, at the option of the sender. The experiment is thus open at all times to revisal. Newspapers go free in

FOREIGN LETTERS SUSPECTED TO CONTAIN PROHIBITED GOODS MAY BE OPENED IN THE PRESENCE OF A JUSTICE, OR MAGISTRATE OF THE DISTRICT.



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Great Britain through the General post; they must be open at each end; any writing or inclosure subjects them to a treble postage. To the British colonies they also go free, if put into a post-office within seven days of publication. To the Continent, where English papers are received free, those printed in their language are also free here. The West India and America Packet is made up the 15th day of every month, and the Leeward Island Packet the third Wednesday in every month. Those for France daily, except Sunday, and for other parts of Europe every Tuesday and Friday.

POSTSCRIPT, an addition made to a letter after it is concluded and signed by the writer. Also, any addition made to a literary performance after it had been supposed to be finished, containing something omitted or something new occurring to the writer.

POSTULATES, fundamental principles in any art or science, which are too easy and self-evident to need demonstration.

POTAE'GO, a kind of pickle imported from the West Indies.

POTASH *(potassa)*, in chemistry, the popular name of vegetable fixed alkali in an unrefined state, procured from the ashes of certain plants by lixiviation and evaporation. The matter remaining after evaporation is refined in a crucible or furnace, and the extractive substance burnt off or dissipated. Refined potash is called *pearlash*.

POTAS'SIUM, in chemistry, a substance procured by passing a galvanic charge through vegetable alkali, of which it is the metallic basis. Potassium has the most powerful affinity for oxygen of all substances known; it takes it from every other compound, and hence is a most important agent in chemical analysis.

POTATO, a productive, wholesome, and nutritive root of the genus *Solanum*; a native of America. It is the principal food of the poor in some countries, and has proved one of the greatest blessings bestowed on man. It was introduced into the British dominions by Sir Walter Raleigh in the 16th century; but it came slowly into use, and even at this day is by no means esteemed in some countries of Europe so much as it deserves.—*Potato brandy*: "Several physicians have already pointed out the deleterious effects of potato brandy; but as the researches of chemists could not find any injurious principle in the rectified spirit, no attention was paid to this opinion. M. Krauss, of Dusseldorff, imagines that he has found out the difference between spirit of wine and spirit of potatoes, but he deems it much more important first to show that not only is the rectification of the latter spirit too often carelessly conducted, but the spirit itself is made from potatoes which are either rotten, or which have begun to germinate. Its effects upon the human frame he describes as dreadful; producing delirium tremens, idiocy, &c."

POTEN'TIAL, having power to impress on us the ideas of certain qualities, though the qualities are not inherent in the thing; as *potential* heat or cold.—*Potential mood*, in grammar, is that form of the verb which is used to express the power, possibility, liberty, or necessity of an action or of being; as, I *may* go, he *can* sing.

POTSTONE, in mineralogy, a kind of indurated black talc, passing into serpentine. It is of a greenish gray colour, and occurs massive, or in granular concretions.

POTTERN ORE, in mineralogy, a species of ore which, from its aptness to vitrify like the glazing of potter's ware, the miners call by this name.

POTTERY, the manufacture of earthen pots, or earthenware in general, but particularly of the coarser sorts. The better kinds of pottery, called in this country *Staffordshire ware*, are made of an artificial mixture of alumina and silica; the former obtained in the form of a fine clay from Devonshire chiefly; and the latter consisting of chert or flint, which is heated red-hot, quenched in water, and then sifted to powder. Each material, carefully powdered and sifted, is diffused through water mixed by measure, and brought to a due consistency by evaporation; it is then highly plastic, and formed upon the potters' wheel or lathe into various circular vessels, or moulded into other forms, which, after having been dried in a warm room, are enclosed in baked clay vessels, resembling bandboxes, and called *seggars*; these are ranged in the kiln so as nearly to fill it, leaving only space enough for the fuel; here the ware is kept red-hot for a considerable time, and thus brought to the state of *biscuit*. This is afterwards *glazed*, which is done by dipping the biscuit-ware into a tub containing a mixture of about 60 parts of litharge, 10 of clay, and 20 of ground flint, diffused in water to a creamy consistence, and when taken out enough adheres to the piece to give an uniform glazing when again heated. The pieces are then again packed up in the seggars, with small bits of pottery interposed between each and fixed in a kiln as before. The glazing mixture fuses at a very moderate heat, and gives an uniform glossy coating, which finishes the process when it is intended for common white ware. [*See* EARTHENWARE.]

POUNCE, gum-sandarach pulverized, a fine powder used to prevent ink from spreading on paper. There is also a kind of *pounce*, used by embroiderers and lacemakers, which is made of charcoal dust, and enclosed in muslin, &c. to be passed over holes pricked in the work, to mark the lines or designs on a paper underneath.—*Pounces*, in falconry, the talons or claws of a bird of a prey.

POUND, a weight containing 12 ounces troy, and 16 avoirdupois weight. It also denotes a money of account; so called because the ancient pound of silver weighed a pound troy.—*Pound*, any enclosed place, erected by authority, in which cattle are confined when taken in trespassing, or going at large, in violation of law. A common pound is kept in every township, lordship, or village; and it is said there



POTASH IS LARGELY EMPLOYED IN THE MANUFACTURE OF FLINT GLASS AND SOFT SOAP, THE RECTIFICATION OF SPIRITS, BLEACHING, MAKING ALUM, &c.

THE NARCOTIC PROPERTY OF THE POTATO IS WHOLLY DISSIPATED BY COOKING, AND IT IS THEN PERFECTLY WHOLESOME.

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ought to be one in every parish, the want whereof is punishable in a court-leet.

POURPRESTURE, in law, any encroachment on the highway, by the erection of a shed, or the throwing out a window, &c.

POW'ER, in a philosophical sense, the faculty of doing or performing anything. The exertion of *power* proceeds from the will; and in strictness, no being destitute of will or intelligence can exert power.——*Active power* is that which moves the body; *speculative power* is that by which we see, judge, remember, or, in general, by which we *think*. Power may exist without exertion: we have *power* to speak when we are silent. This word, indeed, has an almost unlimited signification, whether as regards animal strength or mental ability: we speak of the *powers* of genius; the reasoning *powers*; the *power* which a man has of relieving the distressed; his moral *power*, &c.——*Power* also means force or momentum; as, the power of the wind, which propels a ship or overturns a building; or the immense power of steam when applied to machinery.——*Power*, in mechanics, any force which, applied to a machine, sets it in motion. There are six simple machines, which are particularly denominated the six mechanical *powers*, namely, the *lever*, the *balance*, the *screw*, the *wheel and axle*, the *wedge*, and the *pulley*. The simple weight, as applied to clocks, jacks, and other machines, is the power which can be most easily applied as a first mover, and its action also is most uniform. As this power requires to be renewed after a certain period, it is mostly used for slow movements. The spring is a useful moving power, but, like the weight, it requires to be wound up after a certain time, whence it is also chiefly used for slow movements. The spring differs from the weight in one remarkable respect, which is, that its action is never uniform, being strongest when most bent; but there are methods of rectifying this defect. Thus the chain of a watch is made to wind on a conical piece of metal, which assists the action of the spring when it is wanted.—The steam of boiling water is a most powerful agent, and recent improvements have extended the application of it from the smallest to the most powerful engines. The power of a horse will raise a weight over a pulley 80lbs. four miles an hour, which is equal to drawing a load of two tons on a level road the same distance.——*Power*, in arithmetic, the product of any quantity multiplied by itself any number of times, as the square, cube, biquadrate, &c.——*Power*, in law, the authority which one man gives another to act for him. The instrument or deed by which this is done is called a *power of attorney*.

POWTER, an appellation given to a certain kind of pigeon which has a habit of swelling up its neck when it is displeased.

POYNING'S LAW, an act of parliament made under Henry VII., whereby the law of England became in force in Ireland. It derived its name from Sir Edward Poyning, then lord lieutenant of Ireland.

PRACTICE, in arithmetic, a neat and easy way of determining the amount of numbers of articles at a price, by taking the aliquot parts of a pound or shilling, dividing accordingly, and adding the quotients together for pounds or shillings.——*Practice of the courts*, in law, the form and manner of conducting or carrying on suits at law or in equity.

PRÆCEPTORIS, in ecclesiastical affairs, certain benefices having their name from being possessed by the more eminent Templars, whom the chief master, by his authority, created and called *Præceptores Templi*.

PRÆCIPE IN CAPITE, in law, a writ issuing out of the court of chancery for a tenant who held of the king in chief, as of his crown, and not as of any honour, castle, or manor.

PRÆCIPITATIO DE ROBURE, in antiquity, a capital punishment among the Romans, which consisted in throwing the criminal headlong from that part of the prison which was called *Robur*.

PRÆCOGNITA, things previously known in order to understand something else. Thus a knowledge of the structure of the human body is one of the *præcognita* of medical science and skill.

PRÆFECTURE, in antiquity, an appellation given to certain towns in Italy, whose inhabitants had the name of Roman citizens, but were neither allowed to enjoy their own laws nor magistrates, being governed by annual prefects sent from Rome. These were generally such places as were suspected, or had some way or other incurred the displeasure of the state.—The title *prefectus* was given to many officers in ancient Rome.

PRÆMUNI'RE, in law, a writ granted against a person for introducing and maintaining the papal power, creating an *imperium in imperio*, and yielding that obedience to the mandates of the pope, which constitutionally belongs to our rightful sovereign.

PRÆNO'MEN, among the Romans, like our Christian name, served to distinguish brothers, &c., from each other; as Caius, Lucius, Marcus, Julius, &c. Care was generally taken, in conferring the *prænomen*, to give that of the father to the eldest, that of the grandfather to the second, and so on. The *prænomen* was not brought into use till long after the *nomen*, or family name.

PRÆTEXTA, or TOGA PRÆTEXTA, was a long white robe, with a purple border, originally appropriated by Tullius Hostilius to the Roman magistrates and some of the priests; but afterwards worn by children of quality, by boys till the age of seventeen, when they assumed the toga virilis; and by girls till they were married.

PRÆTOR, a chief magistrate among the Romans, instituted for the administration of justice in the absence of the consuls. The office of *prætor* was instituted in the year of the city 388, to administer justice in the city, instead of the consuls, who were at that time wholly engaged in foreign wars. The institution also was intended to com-

POWER-LOOMS IN FACTORIES ARE DRIVEN EITHER BY WATER OR STEAM; AND MANY OF THEM ARE ADMIRABLE SPECIMENS OF MECHANISM.

THE "GREAT POWERS OF EUROPE" IS A TERM OF MODERN DIPLOMACY, FOR BRITAIN, FRANCE, AUSTRIA, PRUSSIA, AND RUSSIA.



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penuate to the nobility the loss of their exclusive right to the consulship, to which honour the commons had now put in their claim, and succeeded. The prætor decreed and proclaimed public feasts, had the power to make and repeal laws, with the approbation of the senate and the people; and kept a register of all the freed-men who were enfranchised at Rome. In the absence of the consuls he had a right to command the armies; he also commanded the *questors*, who served him as lieutenants, and were charged with part of the business of his office. He was entitled to the *prætexta*, the curule chair, and two lictors to walk before him in Rome, and six when out of the city.

PRÆTORIA'NI, PRÆTORIÆ COHORTES, or *Prætorian Guards*, were the emperor's guards, who in time were increased to ten thousand. The Prætorian bands owe their first institution to Scipio Africanus, who chose for his guards a company of the bravest men in his army; but in time they became very inimical to the liberties of their country.

PRÆTO'RIUM, among the Romans, denoted the hall or court where the prætor administered justice: it was also his palace.

PRAGMATIC SANC'TION, in the civil law, is a rescript or answer of the sovereign, delivered by advice of his council to some college, order, or body of people, who consult him in relation to the affairs of their community. A similar answer given to an individual is called simply a rescript.—— The term *pragmatic sanction* was given to the settlement made by Charles VI., emperor of Germany, when, having no sons, in 1722 he settled his hereditary dominions on his eldest daughter, the archduchess Maria Theresa.

PRA'IRIE (a French word, signifying a *meadow*), used to designate the remarkable natural meadows, or plains, which are principally found in the Mississippi valley, N. America. They are classed as follows:— 1. The *heathy*, or *bushy*, which have springs, and are covered with small shrubs, bushes, grape-vines, &c., very common in Indiana, Illinois, and Missouri. 2. The *dry*, or *rolling*, generally destitute of water, and almost all vegetation but grass. These are the most common and extensive: the traveller may wander for days in these vast and nearly level plains, without wood or water, and see no object rising above the plain of the horizon. In this kind of prairies roam immense herds of bisons. 3. The *alluvial* or wet prairies form the third and smallest division; they are covered with a rich vegetation, and have a black, deep, and friable soil, of inexhaustible fertility; but in a state of nature they are covered with tall rank grass, and in the rainy season are frequently overflowed, or contain numerous pools, the waters of which pass off solely by evaporation.

PRAM, or PRAAM, a flat-bottomed boat or lighter, used in Holland for conveying goods to or from a ship in loading or unloading. Also a kind of floating battery mounting several cannon, used in covering the disembarkation of troops.

PRA'TIQUE, in commerce, a license or permission to hold intercourse and trade with the inhabitants of a place, after having performed quarantine, or upon a certificate that the ship did not come from an infected place.

PREAD'AMITE, an appellation given to the inhabitants of the earth, who by some are supposed to have lived before Adam

PRE'AMBLE, in law, the introductory matter to a statute, which contains the reasons for making such an enactment.

PREB'END, the stipend or maintenance a prebendary receives out of the estate of a cathedral or collegiate church. Prebends are *simple* or *dignitary*; a simple prebend has no more than the revenue for its support; but a prebend with dignity, has always a jurisdiction annexed to it.

PREB'ENDARY, an ecclesiastic who enjoys a prebend. The difference between a prebendary and a canon is, that the former receives his prebend in consideration of his officiating in the church; but the latter merely in consequence of his being received into the cathedral.

PRECE'DENCE, by custom and courtesy, the right of taking place before another, which is determined by authority, and followed exactly on all public occasions of processions and the like.

PRE'CEDENT, in law, a judicial decision, which serves as a rule for future determinations in similar or analogous cases: thus the precedents of a court have the force of laws, and no court will reverse a judgment contrary to many precedents.—— *Precedent* also frequently denotes an original authentic instrument or writing, which serves as a form to draw others by.

PRECEN'TOR, the chanter or master of the choir in a cathedral.

PRE'CEPT, in law, a command in writing sent by a justice of the peace, &c., for bringing a person, record, or other matter before him.—In a general sense, a *precept* signifies any commandment or order intended as an authoritative rule of action; but applied particularly to commands respecting moral conduct. Hence *preceptor*, a teacher.

PRECES'SION of the EQ'UINOXES, in astronomy, a motion of the axis of the earth, by which the equinoctial points, or nodes, recede, with reference to the stars, 1° 23′ 48″ in a century. It appears that the pole, the solsticeş, the equinoxes, and all the other points of the ecliptic, have a retrograde motion, and are constantly moving from east to west, or from Aries towards Pisces, &c., by means of which the equinoctial points are carried further and further back among the preceding signs or stars at the rate of about 50¼″ each year; which retrograde motion is called the *precession*, *recession*, or *retrocession*, of the equinoxes. It was discovered by Hipparchus, a century and a half before the Christian era, though it is alleged that the astronomers of India had discovered it long before.

PRECIP'ITATE, in chemistry, is any matter or substance which, having been



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THE SEAT OF A PREBENDARY IN THE CHURCH IS CALLED A PREBENDAL STALL, INTO WHICH HE IS INDUCTED BY THE DEAN AND CHAPTER.

THE PRECESSION OF THE EQUINOXES IS OWING TO THE SPHEROIDICAL FIGURE OF THE EARTH, WHICH FIRST ARISES FROM THE ROTATION

dissolved in a fluid, falls to the bottom of the vessel on the addition of some other substance, capable of producing a decomposition of the compound. The term is generally applied when the separation takes place in a flocculent or pulverulent form; in opposition to crystalization, which implies a like separation in an angular form. But chemists call a mass of crystals a *precipitate*, when they subside so suddenly, that their proper crystaline shape cannot be distinguished by the naked eye.——*Precipitate per se*, or *red precipitate*, the red oxyde or peroxyde of mercury.

PRECIPITATION, in chemistry, the process of decomposition by which any body separates from others in a solution and falls to the bottom.

PREDESTINATION, in theology, a term to denote the pre-ordination of men by the Supreme Being to everlasting happiness or misery. One who believes in this doctrine is called a *predestinarian*.

PREDIC'AMENT, in logic, a category. The school philosophers distribute all the objects of our thoughts and ideas into genera or classes, which the Greeks call *categories*, and the Latins *predicaments*.

PRED'ICATE, in logic, that part of a proposition which affirms or denies something of the subject: thus, in these propositions, "snow is white, ink is not white," whiteness is the *predicate* affirmed of snow, and denied of ink.

PRE-EMP'TION, the right of purchasing before others. Prior discovery of land inhabited by uncivilized tribes is held to give the discoverer the *pre-emption*, or right of purchase before others.

PREEN, to clean, arrange, and dress the feathers, as fowls, to enable them to glide more easily through the air or water. For this purpose they are furnished with two glands on their rump, which secrete an oily substance into a bag, from which they draw it with the bill and spread it over the feathers.

PRE'FIX, or AF'FIX, in grammar, a particle put to the beginning of a word, either to vary its form or alter its signification.

PREHEN'SILE, adapted to seize or grasp. Thus we say, the tails of some monkeys are *prehensile*.

PREHN'ITE, a mineral of the siliceous kind, of an apple-green or greenish gray colour. It has been called aborl, emerald, chrysoprase, felspath, chrysolite, and zeolite. It is massive or crystalized, but the form of its crystals cannot be determined in consequence of their aggregation.

PRE'JUDICE, decision neither founded upon nor consistent with reason, and the error of ignorance, weakness, or idleness. It is the enemy of all truth, knowledge, and improvement; and in the blindness of the mind, rendering its powers useless and mischievous. Innumerable are the prejudices we imbibe in our youth; we are accustomed to believe without reflection, and to receive opinions from others without examining the grounds by which they can be supported.

PRE'LATE, an ecclesiastic raised to some eminent dignity in the church; as a bishop, an archbishop, or a patriarch. The office or dignity of a prelate is called a *prelacy*.

PRELIM'INARY, in general, denotes something to be examined and determined before an affair can be treated of to the purpose. The *preliminaries of peace* consist chiefly in settling the powers of ambassadors, and certain points in dispute, which must be determined previous to the treaty itself.

PREMI'SES, in logic, the two first propositions of a syllogism, from which the inference or conclusion is drawn. Also, propositions antecedently proposed or proved. ——*Premises*, in law, lands, tenements, &c. before mentioned in a lease or deed.

PRE'MIUM, properly, a reward or recompense; but it is chiefly used in a mercantile sense for the sum of money given to an insurer, whether of ships, houses, lives, &c. Also the recompense or prize offered for a specific discovery, or for success in an enterprise. It is sometimes synonymous with *interest*; but generally it is a sum per cent. distinct from the interest; as, the bank lends money to government at a *premium* of 2 per cent.

PREMON'STRANTS, a religious order of regular canons or monks of Prémontré, in the isle of France; instituted in 1120.

PREMOR'SE, in botany, an epithet which, when applied to *roots*, means such as are not tapering, but blunt at the end; when applied to *leaves*, such as end very obtusely with unequal notches.

PREPEN'SE, in law, premeditation and forethought as applied to bad actions; whence the term *malice prepense*.

PREPOSI'TION, in grammar, a part of speech, which is used to show the relation of one subject to another.

PREROG'ATIVE, an exclusive or peculiar privilege.——The *royal prerogative* is that special pre-eminence which a sovereign has not only over other persons, but over the ordinary course of the common law, in right of the regal dignity. Among these are the right of appointing ambassadors, and of making peace and war.——It is the *prerogative* of the house of lords in Great Britain to decide legal questions after the decisions of the courts of law have been appealed against. It is the *prerogative* of the house of commons to determine the validity of all elections of their own members. It is the *prerogative* of a father to govern his children. And the right of governing created beings is the *prerogative* of the Great Creator.

PREROG'ATIVE COURT, an ecclesiastical court established for the trial of all testamentary causes, where the deceased has left *bona notabilia* (61.) within two different dioceses. In which case the probate of wills belongs to the archbishop of the province, by way of special prerogative. And all causes relating to the wills, administrations, or legacies of such persons, are originally cognizable herein, before a judge





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appointed by the archbishop, called the judge of the prerogative court.

PRESBYO'PIA, in medicine, that defect in vision by which objects that are near are seen confusedly, but those at a distance more distinctly. It proceeds from various causes, but generally arises from too great flatness in the crystaline humour, and is common with aged persons.

PRES'BYTER, in the primitive Christian church, an elder; one who had authority in the church, and whose duty was to watch over the flock. The word is borrowed from the Greek translation of the Old Testament, where it usually signifies a ruler or governor; it being a title of office and dignity, not of age, and in this sense bishops are sometimes called presbyters in the New Testament.

PRESBYTE'RIANS, a sect of Protestants, so called from their maintaining that the government of the church appointed in the New Testament was by *presbyteries;* that is, by ministers and ruling elders, associated for its government and discipline. ——The kirk or church of Scotland is governed by presbyteries, synods, and general assemblies: which constitution was introduced from Geneva, together with the doctrines of Calvin, the reformer of that country, by the well-known John Knox. In the kirk of Scotland there are fifteen synods, and sixty-nine presbyteries. The presbyterians stand opposed to the *episcopalians*, the latter preferring the hierarchy of bishops; and to *congregationalists* or *independents*, who hold every *pastor* to be as a bishop or overseer of his own congregation, *independent* of any person or body of men.

PRESCRIP'TION, in law, a right and title to a thing grounded upon a continued possession of it beyond the memory of man.——*Prescription* differs from *custom*, which is a local usage. Prescription is a *personal* usage annexed to the person.——*Prescription*, in medicine, a direction of remedies for a disease and the manner of using them, as prescribed by a physician.

PRES'ENCE OF MIND, that calm, collected state of the mind and faculties, which enables a person to speak or act without disorder or embarrassment in unexpected difficulties.

PRES'ENT TENSE, in grammar, the tense or form of a verb which expresses action or being in the present time, as "I am reading;" or something that exists at all times, as "temperance is always to be preferred to excess;" or it expresses habits or general truths, as plants *grow;* birds *fly;* dogs *bark*, &c.

PRESENTA'TION, in ecclesiastical law, the act of a patron offering his clerk to the bishop, to be instituted in a benefice of his gift. An advowson is the right of presentation. A patron may revoke his presentation before institution, but not afterwards.

PRESENT'MENT, in law, a declaration or report made by jurors or others of any offence to be inquired of in the court to which it is presented.

PRES'ENTS, in the *plural*, is used in law for a deed of conveyance, a lease, or other written instrument; as in the phrase "Know all men by these *presents*;" that is, by the writing itself, *per presentes*.

PRESER'VE, a small enclosed place in gentlemen's grounds, where game is preserved.

PRES'IDENT, an officer appointed to preside over a corporation, company, or assembly of men, to keep order, manage their concerns, or govern their proceedings. Also an officer appointed or elected to govern a province or territory, or to administer the government of a nation.——*Vice-president*, one who is second in authority to the president, and performs the duties of president when the latter is disabled or absent.

PRESS, a machine or instrument by which things are compressed. It acts by means of the screw, and serves for different purposes, as a wine-press, a cheese-press, &c.——By *the press* is meant the publications which are issued through the means of printing. "A free press is a great blessing to a free people; a licentious press is a curse to society."——*Liberty of the press.* [See LIBERTY.]

PRESS'-GANG, a detachment of seamen under the command of an officer, empowered to impress men into the naval service.

PRESS'MAN, in printing, a workman who manages the press and impresses the sheets.

PRESS'URE, the force of one body acting on another by weight or the continued application of power. Pressure is occasioned by weight or gravity, by the motion of bodies, by the expansion of fluids, by elasticity, &c. The degree of pressure is in proportion to the weight of the pressing body, or to the power applied, or to the elastic force of resisting bodies.——In a moral sense, we speak of the *pressure* of debts, the *pressure* of taxes, the *pressure* of afflictions, &c.

PRESTA'TION MONEY, a sum of money paid yearly by archdeacons and other dignitaries to their bishop, *pro exteriore jurisdictione.*

PRES'TIMONY, in canon law, a fund for the support of a priest, appropriated by the founder, but not erected into any title of benefice, and not subject to the pope or the ordinary.

PREST'-MONEY, called *earnest-money*, the sum given to a soldier at the time he enlists, so called because it binds the receiver to be ready for service at all times appointed.

PRESUMP'TIVE EVIDENCE, in law, is that which is derived from circumstances which necessarily or usually attend a fact, as distinct from direct evidence or positive proof.

PRETEN'SION, a holding out the appearance of right or possession of a thing, with a view to make others believe what is not real, or what, if true, is not yet known or admitted. There are ill-founded pretensions and well-founded pretensions: for instance, a man may make *pretensions*



THE OBJECT OF "PRESCRIPTION" IS TO SECURE THE TITLE OF PROPERTY TO ITS POSSESSOR, AND TO PREVENT ANY ONE FROM DISTURBING HIM IN IT.

A REPRESENTATIVE GOVERNMENT, WITHOUT THE LIBERTY OF THE PRESS, WOULD SOON DEGENERATE INTO AN INSTRUMENT OF OPPRESSION.

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action or the basis of a system; as the *principles* of morality; the *principles* of the Stoics, &c.

PRINTING, the art of taking impressions from wooden-blocks, types, or plates, upon paper, silk, calico, or any other substance.—PRINTING, or TYPOGRAPHY, is that very important art by means of which copies of books are multiplied, and consequently, knowledge and science diffused among mankind. It is understood to have been practised very anciently in China; but Chinese printing differs from European essentially, and the praise of rendering the art truly valuable to the human race belongs to him who first introduced movable types. In their first essays, Guttenburg, Faust, and Ments all used wooden blocks, on which the letters were cut in the Chinese manner; and from the specimens that remain, it appears that they impressed only one side of the paper, taking the pains to paste the blank faces of every two leaves together, to make one with print on either side. After this, they used single letters of wood; and at length, letters of metal. This last great invention is generally attributed to Schoeffer, first the servant, and afterwards the partner and son in-law of Faust. At the invention of printing, the character of type employed was the old Gothic or German. The Roman type was first introduced by Sweynheim and Pannartz, at Rome, and the *Italic* by Aldus. The earliest complete Greek work was a grammar of that language, printed at Milan in 1476. The Pentateuch, which appeared in 1482, was the first work printed in the Hebrew character, and the earliest known Polyglott bible—Hebrew, Arabic, Chaldaic, Greek, Latin—issued from the press of Genoa in 1516. The art of printing was first introduced into England by William Caxton, a native of Kent, who established a press in Westminster Abbey, some time between 1471 and 1474. Before the middle of the 16th century printing had reached a flourishing condition in England; for it is recorded that, in the reign of Henry VIII. and his successors, English printers had become "so skilful as to print books as well as any beyond the seas." In Scotland the art is not known to have existed earlier than the year 1500; and about fifty years after that time we find it was introduced into Ireland. But Scotland was not long before it distinguished itself by the extent and beauty of its typographical productions; while Ireland can hardly be said to have advanced a step in the art of printing *books* till the beginning of the 18th century.—The workmen by whom the art of printing is performed are of two kinds, 1. *Compositors*, who range and dispose the letters into words, lines, pages, and sheets; and, 2. *Pressmen*, who apply the ink and take off the impressions. Until a comparatively recent period, the printing press was chiefly formed of wood; and, for the first essential modification of it, the world is indebted to the late earl Stanhope. His (the Stanhope) press is composed entirely of iron; the table on which the types rest, and the platten (or surface which gives the impression) are made perfectly level; a beautiful combination of levers is added to give motion to the screw, causing the platten to descend with increasing rapidity, and consequently with increasing force, till it reaches the type, when a very great power is obtained. Various other iron presses, more or less upon the principle of the "Stanhope," with such improvements as time and farther experience suggested, were subsequently made; among which the ingenious inventions of Messrs. Clymer, Ruthven, Cogger, and Cope deserve to be mentioned: but still they were only presses, acting by a reciprocating, not by a continuous motion: and it is a remarkable fact, that from the invention of printing to the year 1798, a period of nearly three hundred years, no improvement had been introduced into this important art. A new era had, however, arrived, when the demands for prompt circulation of political intelligence required powers of printing newspapers beyond the reach of the most expeditious hand presswork; and at length the automatic printing machine struggled into existence. A mere outline of the improvements which have taken place since the commencement of the present century, would occupy many pages. The great triumph in the art has, however, been the substitution of cylindrical machinery for the screw-press. The *suggestion* of this improvement belongs to Mr. W. Nicholson, the able editor of the Philosophical Journal; but the first *working* machines were erected by Mr. König (from Saxony), who was engaged for several years in this country in bringing his machines to perfection; and, at length, the reader of the *Times* newspaper was told, on Nov. 28th, 1814, that he held in his hand a newspaper printed by machinery, and by the power of steam! In these machines the type was made to pass under the cylinder, on which was wrapped the sheet of paper, the paper being firmly held to the cylinder by means of tapes; the ink was placed in a cylindrical box, from which it was forced by means of a powerful screw depressing a tightly-fitted piston; thence it fell between two iron rollers; below these were placed a number of other rollers, two of which had, in addition to their rotary motion, an end motion, *i. e.* a motion in the direction of their length; the whole system of rollers terminated in two, which applied the ink to the types. This machine produced 1100 impressions per hour; subsequent improvements raised them to 1800 per hour. The next machine, also by Mr. König, was for printing both sides of the sheet, by conveying the sheet from one paper cylinder to the other. This was made in 1815, and printed 1000 sheets on both sides per hour. In the same year Mr. Cowper obtained a patent for curving stereotype plates, for fixing them on a cylinder. These machines, though only adapted for stereotype printing, first showed the best method of furnishing, distributing, and ap-





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contrary to law, are binding on the subject. Anciently, the *privy-council* was a high court of justice; but in modern times it seldom or never interferes with judicial matters, confining itself to the executive branch of government. A privy-council is summoned on a warning of forty-four hours, and never held without the presence of a secretary of state. In debates, the lowest delivers his opinion first; the sovereign, if present, last; and though the privy-councillors thus give their opinions, it is that of the sovereign alone which is decisive.

PRIVY-SEAL, a seal affixed by the queen, or by the lord keeper of the privy-seal, to instruments that afterwards pass the great seal.——The word *privy-seal* is also used elliptically for the person intrusted with the privy-seal; as, "the queen's sign manual is the warrant to the *privy-seal*, who makes out a writ or warrant thereon to the chancery."

PRO AND CON, i.e. *pro* and *contra*, for and against, a phrase frequently occurring in common parlance.

PRO'A, a vessel used in the South Seas, with the head and stern exactly alike, but with the sides differently formed; that intended for the lee side being flat, the other rounded. To prevent oversetting, the proa is furnished with a frame extended from the windward side, called an outrigger.

PROBABIL'ITY, that state of a question which falls short of moral certainty, but inclines the mind to receive it as the truth. Demonstration produces certain knowledge; proof produces belief, and *probability* opinion.——If the chance that a thing may happen is less than the chance that it may not happen, it is said to be probable; and the numbers which express these variable chances, when ascertained, constitute what is termed the *science of probabilities*. As applied to human life, founded on tables of mortality, it serves as the foundation of societies which, for certain annual premiums, varied according to age, undertake to pay certain sums to the heirs of the party, whose life is thereby insured for that sum.

PRO'BATE, in law, the proof of the genuineness and validity of a will, or the exhibition of the will to the proper officer, and such other proceedings as the law prescribes, as preliminary to the execution of it by the executor.

PROB'LEM, in logic, a proposition that appears neither absolutely true nor false, and consequently may be asserted either in the affirmative or negative.——In geometry, a proposition in which some operation or construction is required, as to divide a line or an angle, &c.——In algebra, a question or proposition which requires some unknown truth to be investigated, and the truth of the discovery demonstrated.——In a general sense, a *problem* may be defined, any question involving doubt or uncertainty, and requiring some operation or further evidence for its solution.

PROBOS'CIS, in natural history, the trunk or snout of an elephant, and of some other animals, particularly of insects. Flies, gnats, &c. are furnished with a proboscis, or trunk, by means of which they suck the blood of animals and the juices of vegetables.

PROCATARX'IS, in medicine, the predisposing cause of a disease: the *proecatarctic* cause.

PRO'CEEDS, in commerce, the sum, amount, or value of goods sold or converted into money.

PROCELLA'RIA, in ornithology, the *Storm-bird*, a genus of birds belonging to the order of the *passeres*. It is about the size of the common water-wagtail, and its general colour is black, except that the covering feathers of the wings have some white towards their tips. When it hovers about ships it is a sure token of an approaching storm.

PRO'CESS, in law, the whole course of proceedings in any cause, real or personal, civil or criminal, from the original writ to the end of the suit. In a more limited sense, process denotes that by which a man is first called into any temporal court.—— *Original process* is the means taken to compel the defendant to appear in court. *Mesne process* is that which issues, pending the suit, upon some collateral or interlocutory matter. *Final process* is the process of execution.——*Process*, in chemistry, the whole course of an experiment or series of operations, tending to produce something new. *Process*, in anatomy, any protuberance, eminence, or projecting part of a bone.

PRO'CHRONISM, an error in chronology, when events are dated anterior to the time at which they happened.

PROCLAMA'TION, a public, notice or declaration of anything in the name of the sovereign or supreme magistrate. Proclamation is used for a solemn declaration of war and peace, and for the act of notifying the accession of a prince to the throne; also for the public declaration used at the calling of a court; and for various other objects.

PRO CONFES'SO, in law, a term applied to a defendant in chancery who appears and is afterwards in contempt for not answering; wherefore the matter contained in the bill shall be taken *pro confesso*, that is, as though it had been confessed.

PROCON'SUL, a Roman magistrate sent to govern a province with consular authority. The proconsuls were appointed from the body of the senate, and their authority expired at the end of a year from their appointment. Before the proconsul quitted Rome, he went up to the Capitol, offered sacrifice, put on the robe of war called *paludamentum*, and then departed from the city in pomp, preceded by lictors, with rods and axes, and attended by his friends to some distance from Rome. His equipage, consisting of pavilions, horses, mules, clerks, secretaries, &c. was called his *viaticum*, and provided at the public expense.

PROCTOR, a person employed to manage another's cause in a court of civil or ecclesiastical law, as in the court of admi-



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WHENEVER WANT OF MONEY, OR WANT OF DESIRE IN THE CONSUMER, LOWERS THE PRICE OF A COMMODITY, IT SOON REACHES THE FIRST PRODUCER.

IN TAKING A LIKENESS IN PROFILE, THE ARTIST MUST AVOID EXAGGERATING THE PECULIAR TRAITS, LEST HE APPROACH CARICATURE.

ralty, or in a spiritual court.——Also the magistrate or superintendant of a university.

PROCUM'BENT, in botany, trailing; unable to support itself, and therefore lying on the ground, but without putting forth roots: as, a *procumbent* stem.

PROCURA'TION, in law, a composition paid by an incumbent to the bishop or archdeacon, to commute for the entertainment which was to have been given him at his visitation. Also, the instrument by which a person is empowered to transact the affairs of another.

PROCURATO'RES, under the Roman emperors, were officers sent into the provinces to regulate the public revenue, receive it, and dispose of it as the emperor directed. Such an officer was Pontius Pilate in Judea; but as the Jews were looked upon as a rebellious people, besides his authority over the revenue, he was invested with all the power of a pro-consul, even a power of life and death.——*Procuratores*, in the Roman courts of judicature, were properly such lawyers as assisted the plaintiff in proving, or the defendant in clearing himself from the matter of fact alleged. They are often confounded with the *advocates*.

PRO'DUCE, in an enlarged sense, is what any country yields from labour and national growth, which may serve either for the use of the inhabitants, or be exported to foreign countries. In a more limited sense, we speak of the *produce* of a farm, of a mine, of a tax, &c.; but when we allude to a work either of nature or art, we use the word *production*.

PRO'DUCT, in arithmetic, the number or quantity produced by multiplying two or more numbers together, as $5 \times 4 = 20$, the product required.——In a general sense, that which is produced by nature, as fruits, grain, metals; as the *products* of the season.——*Productive labour* is that which increases the number or amount of products; opposed to *unproductive labour*. The labour of the farmer and mechanic is productive; the labour of officers and professional men is unproductive to the state.

PROEMPTO'SIS, in astronomy, that which makes the new moon appear a day later by means of the lunar equation than it would do without the equation.

PROFES'SION, a word which, when applied to a person's vocation or employment, designates an occupation not merely mechanical. We say, the learned *professions*; the *profession* of a clergyman, a lawyer, a physician, a surgeon, a lecturer, or a teacher. In like manner, we use the word *professional* when speaking of literary and scientific studies, pursuits, or duties.

PROFES'SOR, in its original sense, signifies one who makes open declaration of his sentiments or opinions, particularly one who makes a public avowal of his belief in the Christian doctrine and revelation.——In its more modern and common acceptation, a *professor* is one that publicly teaches any science or branch of learning; as a professor of natural history, of mathematics, of theology, &c. In a university, some professors are denominated from the arts they profess, others from the founders of the professorships, or those who assigned a revenue for the support of the professors.

PRO'FILE, in general, the view of an object from one of its chief sides, at which more or less of the other side is hidden from the eye.——*Profile*, in sculpture and painting, a head, portrait, &c., represented sideways, or in a side view. On almost all medals, faces are represented in profile.——*Profile*, in architecture, denotes the outline of a figure, building, or member, also the draught of a building, representing it as if cut down perpendicularly from the roof to the foundation.

PROFIT AND LOSS, in commerce, the gain or loss arising from goods bought and sold; the former of which, in book-keeping, is placed on the creditor's side; the latter on the debtor's side. *Net profit* is the gain made by selling goods at a price beyond what they cost the seller, and beyond all costs and charges.—Among the many wise precepts which appear in the pages of the "Rambler," there are few more worthy to be borne in mind than this: "Let no man anticipate uncertain profits."

PROFLU'VIA, in medicine, fluxes; the fifth order in the class *Pyrexia* of Cullen's nosology, characterized by pyrexia, with increased excretions.

PROGNO'SIS, in medicine, the art of foretelling the event of a disease by particular symptoms. Hence the word *prognostic*, a sign or symptom indicating the event of a disease.

PROGRAM'MA, or PRO'GRAMME, a detailed account or advertisement of some public performance. In a university, a billet or advertisement to invite persons to an oration.——In antiquity, an edict posted in some public place.

PROJECTILES, in mechanical philosophy, is that branch which treats of the motion of bodies thrown or driven by an impelling force from the surface of the earth, and affected by gravity and the resistance of the air.——*Projectile force*, the force of explosion or projection with which a common ball or missile is thrown, which imparted force being gradually parted with to the air, and counteracted by the constant downward force, occasions the body to describe a curve line.—The velocity of a musket ball is, on an average, 1600 feet per second, and its range half a mile. In velocities exceeding 1600 feet per second, the resistance of the air is greatly increased; hence the absurdity of giving balls too great an initial velocity. To give a bullet the velocity of 2000 feet per second, requires half as much more powder as to give it the velocity of 1600 feet; yet after both have moved 400 feet, the difference between the velocity of each is reduced to 8 feet per second. A 24-pound ball moving at the rate of 2000 feet per second, meets a resistance of 800 pounds.

PROJEC'TION, in architecture, the outjutting or prominency of columns, &c. be-



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MISSIONARY SOCIETIES FOR THE PROPAGATION OF THE PROTESTANT RELIGION HAVE BEEN FORMED ON THE MODEL OF THE PROPAGANDA.

EVERY SPECIES OF ORDNANCE UNDERGOES DIFFERENT KINDS OF PROOF BEFORE IT IS RECEIVED INTO HER MAJESTY'S SERVICE.



yond the level of the wall.——*Projection of the Sphere*, in astronomy, a representation of the circles on the surface of the sphere. There are three principal points of projection; the *stereographic*, the *orthographic*, and the *gnomonic* [which see respectively].

PROJOJOY. The following cannot fail to be regarded by the lovers of natural history as affording a most singular instance of the close connexion between the animal and vegetable world. In September, 1839, "at the ordinary scientific meeting of the Zoological Society, the first communication read was a letter from Mr. Mackay, of the British consulate, at Maracaibo, on a plant called *projojoy* in the country from which it is derived, and which arrives in this state from the strange metamorphose of an insect. In the insect, which was described, some of the legs had been already changed into roots, and in this state it was presented to the contributors. It was announced that a similar insect had been discovered in North Carolina, which assumed alternately that form along with a plant. When this hybrid creature assumes the form of an insect, or animal, it is about an inch in length, and much resembles a wasp in appearance. When the insect has attained its full length it disappears under the surface of the ground, and dies; soon after which the two head legs begin to sprout and vegetate, the shoots extending upwards, and the plant in a short time reaching the height of six inches. The branches and the leaves are like the trefoil, and at the extremities of the former there are buds, which contain neither leaves nor flowers, but an insect, which, as it grows, falls to the ground, or remains on its parent plant, feeding on the leaves till the plant is exhausted, when the insect returns to the earth, and the plant shoots forth again."

PROLEGOM'ENA, introductory or preliminary remarks prefixed to a book or treatise.

PROLEP'SIS, a figure in rhetoric, by which the speaker anticipates or prevents objections, by alluding to or answering them himself.

PROLEPTIC, in medicine, an epithet applied to a periodical disease, whose paroxysm returns at an earlier hour every time, as is frequently the case in agues.

PROLIF'EROUS, in botany, prolific. A *proliferous stem* is one which puts forth branches only from the centre of the top, or which shoots out new branches from the summits of the former ones, as the pine and fir. A *proliferous umbel* is a compound one, which has the smaller umbels divided.

PROLIFICATION, in botany, the production of a second flower from the substance of the first; either from the centre of a simple flower, or from the side of an aggregate one.

PRO'LOGUE, in dramatic poetry, an address to the audience previous to the commencement of the play, delivered by one of the performers. It may either be in prose or verse, but is generally in the latter; and it usually consists of apologetic remarks on the merits of the piece about to be represented. Sometimes it relates to the situation in which the author or actors stand to the public, and sometimes it contains allusions to subjects incidental to neither.

PROLU'SION, in literature, a term formerly applied to certain pieces or compositions made previously to others, by way of prelude or exercise.

PROM'ISSORY NOTE, a writing or note of hand, promising the payment of a certain sum at a certain time, in consideration of value received by the promiser.

PROM'ONTORY, in geography, a high point of land or rock projecting out into the sea; the extremity of which towards the sea is called a headland.

PRONATION, in anatomy, that motion of the radius whereby the palm of the hand is turned downwards; opposed to *supination*.

PRO'NOUN, in grammar, a declinable part of speech, which being used instead of a noun, prevents the repetition of it. They are *personal* when they simply denote the person, as "I, thou, he," &c.; *possessive*, when they also denote possession, as "my, thine, his," &c.; *relative*, when they express a relation to something going before, as "which, what;" *interrogative*, when they serve to ask a question; *demonstrative*, when they point out things precisely, as "this, that." Thus we say, "the jury found the *prisoner* guilty, and the court pronounced sentence on *him*: *this* was certainly unjust, for *he* clearly proved an alibi, *which* every person thought must have led to *his* acquittal."

PROOF, in law and logic, that degree of evidence which convinces the mind of the certainty of truth or fact, and produces belief. *Proof* differs from *demonstration*, being derived from personal knowledge or conclusive reasoning; whereas the term demonstration is applicable only to those truths of which the contrary is inconceivable.——In printing and engraving, a *proof* is a rough impression taken for correction.

PROPAGAN'DA, during the French revolution, was a term applied to secret societies whose object was the propagation of democratical principles; and it has since become to signify any kind of institution for making proselytes for political objects. —The name was originally given to those institutions which were erected by the papal court, for the extension of its own power and the Catholic religion among those who were not within its pale. It was called the *congregatio de propaganda fide* (society for propagating the faith), and was founded by Gregory XV. in 1622.

PROP'ER, in heraldry, an epithet for any charge which is to be represented in coat-armour in its own proper tincture or natural colours.

PROP'ERTY, a particular virtue or quality which nature has bestowed on some things exclusive of all others: thus colour is a *property* of light; extension, figure, divisibility, and impenetrability, are proper-



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PROROGATION, a term used at the conclusion of a session of parliament, denoting its continuance from one session to another; as an *adjournment* is a continuation of the session from day to day.

PROSCENIUM, in the Grecian and Roman theatres, was the stage or place before the scene, where the *pulpitum* stood, into which the actors came from behind the scenes to perform.

PROSCRIPTION, a punishment in use among the Romans, which had some analogy to our outlawry. The names of the *proscripti*, or persons suffering under proscription, were posted up in tablets at the forum, to the end that they might be brought to justice, a reward being proposed to those who took them, and a punishment to those who concealed them. Under the triumvirate many of the best Roman citizens fell by proscription.

PROSECUTION, in law, the institution and carrying on a suit in a court of law or equity; or the process of exhibiting formal charges against an offender before a legal tribunal, and pursuing them to final judgment.——The person who institutes and carries on a criminal suit is called the *prosecutor*.

PROSELYTE, a new convert to some religion, system, or party. Thus a pagan converted to Christianity is a *proselyte;* and, although the word primarily refers to converts to some religious creed, we speak familiarly of *proselytes* to the theories of Lavoisier, Black, &c.

PROSENNEAHEDRAL, in crystalography, having nine faces on two adjacent parts of a crystal.

PROSODY, that part of grammar which treats of quantity, accent, and the laws of versification.

PROSONOMASIA, a figure in rhetoric, wherein allusion is made to the likeness of a sound in several names or words: a kind of pun.

PROSOPOLEPSY, a premature opinion or prejudice against a person, formed by a view of his external appearance.

PROSOPOPEIA, a figure in rhetoric, wherein qualities or things inanimate are represented as speaking and acting like animate objects.

PROSPECTUS, the outline or plan of a literary work, containing the general subject or design, with the necessary particulars as to the mode of publication. The word *prospectus* has recently been adopted in announcing many undertakings and schemes not purely literary.

PROSTYLE, in architecture, a range of columns in the front of a temple.

PROTASIS, in the ancient drama, the first part of a comic or tragic piece, in which the several members of the *dramatis personæ* are shown, and the subject or plot entered on.

PROTEA, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*, so called from the variableness of its fructifications. The species consist of a variety of beautiful and graceful shrubs.

PROTEST, a formal and solemn declaration of opinion, given in writing, commonly against some act; as, the *protest* of lords in parliament; or the formal and recorded dissent of a minority against the majority of any public body.——*Protest*, in commerce, a formal declaration made by a notary-public, at the request of the holder of a bill of exchange, for non-acceptance or non-payment of the same, protesting against the drawer and others concerned, for the exchange, charges, damages, and interest. This *protest* is written on a copy of the bill, and notice given to the indorser of the same, by which he becomes liable to pay the amount with charges and interest: also, a similar declaration against the drawer of a note of hand for non-payment to a banking firm, &c. There is also another kind of *protest*, viz. a writing attested by a justice of the peace or consul, drawn by the master of a vessel, stating the severity of the voyage by which the ship has suffered, and showing that the damage was not occasioned by his misconduct or neglect.

PROTESTANT, in church history, a name first given in Germany to those who adhered to the doctrine of Luther: because, in 1529, they protested against a decree of the emperor Charles V. and the diet of Spires, declaring that they appealed to a general council. This name was afterwards extended to the Calvinists, and is now become common to all who belong to the reformed churches. [See REFORMATION.]

PROTESTATION, in law, a declaration in pleading, by which the party interposes an oblique allegation or denial of some fact, *protesting* that it does or does not exist.

PROTEUS, in mythology, a marine deity, whose distinguishing characteristic was the faculty of assuming different shapes. Hence we denominate one who easily changes his form or principles a *Proteus*.——In natural history, the name *Proteus* has been given to an animal, the classification of which has been much controverted, in consequence of its characteristics being equally those of a lizard and a fish. Sir Humphry Davy, who saw one of these singular animals in a lake, in the beautiful grotto of Maddalena, at Adelsburg, in Illyria, thus describes it: "At first you might suppose it to be a lizard, but it has the motions of a fish. Its head, and the lower part of its body, and its tail, bear a strong resemblance to those of the eel; but it has no fins; and its curious bronchial (or lung-like) organs are not like the gills of fishes; they form a singular vascular (net-like) structure, almost like a crest round the throat, which may be removed without occasioning the death of the animal, who is likewise furnished with lungs. With this double apparatus for supplying air to the blood, it can live either below or above the surface of the water. Its fore feet resemble hands, but they have only three claws or fingers, and are too feeble to be of use in grasping or supporting the weight of the animal; the hinder feet have only two claws or toes, and in the larger specimens are

THE PARLIAMENT IS PROROGUED AND DISSOLVED BY THE SOVEREIGN ALONE, BUT EACH HOUSE MAY ADJOURN ITSELF.

HOUSE OF LORDS AND HOUSE OF COMMONS. THE CROWN IS HEREDITARY, BUT THE GOVERNMENT IS A REPRESENTATIVE ONE.



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found so imperfect as to be almost obliterated. It has small points in place of eyes, as if to preserve the analogy of nature. It is of a fleshy whiteness and transparency in its natural state, but when exposed to light, its skin gradually becomes darker, and at last gains an olive tint. Its nasal organs appear large; and it is abundantly furnished with teeth, from which it may be concluded, that it is an animal of prey; yet, in its confined state, it has never been known to eat, and it has been kept alive for many years, by occasionally changing the water in which it was placed."

PROTHON'OTARY, a chief clerk of the king's bench and common pleas.——*Apostolical prothonotaries*, in the church of Rome, are twelve persons constituting a college, who receive the last wills of cardinals, are employed in the proceedings necessary for the canonization of saints, &c.

PRO'TOCOL, the first draught of a deed, contract, or instrument. The word is generally applied to such writings as are of a diplomatic character.

PROTOMARTYR, a term applied to Stephen, the first Christian martyr; and used also for the first sufferer in any cause, religious or political.

PRO'TOPOPE, the imperial confessor, an officer of the holy directing synod, the supreme spiritual court of the Greek church in Russia.

PROTOSUL'PHATE, in chemistry, the combination of sulphuric acid with a protoxyde.

PRO'TOTYPE, an original or model after which any thing is formed.

PROTOX'YDE, in chemistry, a substance combined with oxygen in the first degree.

PROVEDO'RE, a purveyor, or one employed to procure supplies for an army.

PROV'ENCE (or PROV'INCE) ROSE, in botany, one of the most fragrant roses that grows, and of which there are different varieties; as, the white, the blush, and the dwarf provence.

PROV'ERB, a pithy sentence, presenting some striking and familiar image to the mind, which, by the force of association, makes its effect strong and permanent, and thereby often supersedes the necessity of a long discourse or explanation. Proverbs are impartial censors; they take cognizance of the virtues, the vices, and follies, of all classes, without respect of persons. No country is without its proverbs; they are the *vox populi*; but care should of course be taken to select from the mass which abounds, those which are unexceptionable. —In alluding to the free use we had made of them, we remarked, in the Introductory Observations to the Treasury of Knowledge, that "proverbs, however quaintly expressed, contain the essence of some moral truth or practical lesson; they are drawn from real life, and are generally the fruit of philosophy grafted on the stem of experience." Fastidiousness or fashion may fall out with these plain-speaking moralists; our faith in their intrinsic worth remains as firm as ever; and happy shall we be, if through our means, as we have before expressed it, "many of these brief lessons of experience should be engraven on the tablet of the memory, never to be erased."——*Book of Proverbs*, a canonical book of the Old Testament, containing a great variety of wise maxims, practical truths, and excellent rules for the conduct of all classes of men. The first twenty-four chapters are acknowledged to be the genuine work of king Solomon; the five succeeding chapters are a collection of several of his proverbs, made by order of king Hezekiah; and the two last seem to belong to different authors.

PROV'IDENCE, in theology, the care and superintendence which God exercises over his creatures. A belief in divine providence is founded on this rational principle, that the same power which caused a thing to exist is necessary to continue its existence.

PROV'INCE, among the Romans, a country of considerable extent, which, being reduced under their dominion, was new modelled according to the pleasure of the conquerors, subjected to the command of annual governors sent from Rome, and obliged to pay such taxes and contributions as the senate thought fit to demand. These provinces had the appellations of *consular* or *prætorian*, according as they were governed by consuls or prætors.——Among the moderns, a country belonging to a kingdom or state, either by conquest or colonization, usually situated at a distance from the kingdom or state, but more or less dependent on and subject to it. Such are Canada, Nova Scotia, &c. in reference to Great Britain.——In the ecclesiastical division of England, there are two *provinces*, viz. those of Canterbury and York, under the jurisdiction of their respective archbishops.—— *Province*, in geography, a division of a kingdom or state, comprising several cities, towns, &c. all under the same government, and usually distinguished by the extent either of the civil or ecclesiastical jurisdiction.

PROVIN'CIALISM, a mode of speech peculiar to a province or district of country remote from the principal country or from the metropolis.

PROVIS'IONAL, provided for present need or for a temporary occasion; as, a *provisional* government, a *provisional* treaty, &c.

PROVI'SO, in law, an article or clause in any statute, agreement, contract, &c. by which a conditional stipulation is introduced.

PROVOST, in a general sense, a person who is appointed to preside over or superintend; as, the *provost* of a college.——The *provost-marshal* of an army, is an officer appointed to arrest and secure deserters and other criminals, to hinder the soldiers from pillaging, to regulate weights and measures, &c. There is a similar officer in the royal navy, who has the charge of prisoners taken at sea.

PROW, in nautical language, the beak or pointed cutwater of a galley or xebec: the



THE PROVERB IS NEARLY ALLIED TO THE MOTTO, SYMBOL, APOLOGUE, &c., AND THE LIMIT CANNOT ALWAYS BE DRAWN.

"PROVIDENCE IS AN INTELLECTUAL KNOWLEDGE, BOTH FORESEEING, CARING FOR, AND ORDERING ALL THINGS."—PALMER.

upper part is usually furnished with a grating platform. Also the fore-part of a ship.

PROX'IMATE CAUSE, that which immediately precedes and produces the effect, as distinguished from the *remote* or *predisposing* cause.

PROX'Y, the agency of another who acts as a substitute for his principal.—In England, any member of the house of lords may cause another peer to vote for him as his *proxy* in his absence.

PRUNEL'LA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are perennial.

PRU'NING, in horticulture, the lopping off the superfluous branches of trees, either for improving their appearance or to cause them to bear better fruit.

PRU'NUS, in botany, a genus of plants, class 12 *Icosandria*, order 1 *Monogynia*. The different varieties of the plum, cherry, apricot, &c. belong to this genus.

PRURI'GO, in medicine, a cutaneous disease of which there are many varieties. It is caused by sharp humours which stagnate in the skin and corrode the miliary glands.

PRU'SSIAN BLUE, a pigment of a beautiful blue colour. It is a combination of iron with ferrocyanic acid. Good Prussian blue is known by the following tests: it feels light in the hand, adheres to the tongue, has a dark lively blue colour, and gives a smooth deep trace; it should not effervesce with acids, as when adulterated with chalk; nor become pasty with boiling water, as when adulterated with starch.

PRU'SSIATE, in chemistry, a salt formed by the union of prussic acid with different bases, as the *prussiate* of potash, the *prussiate* of iron, &c.

PRU'SSIC ACID, in chemistry, one of the deadliest poisons known. It is a compound of cyanogen, prussic gas, and hydrogen; hence also called *hydrocyanic acid*.

PRYTANE'UM, in Grecian antiquity, the senate-house in Athens, where the council of the *prytanes* assembled, and where those who had rendered any signal service to the commonwealth were maintained at the public expense.—*Prytaneum* was also a name given to all places sacred to Vesta. Hence those widows called *prytanides*, who took care of the sacred fire, received their name.

PSALM, a divine song or hymn; but chiefly appropriated to the hundred and fifty *Psalms of David*, a canonical book of the Old Testament. Most of these psalms have a particular title, signifying either the name of the author, the person who was to set it to music or sing it, the instrument that was to be used, or the subject and occasion of it. Some have imagined that David was the sole author of the Book of Psalms; but the titles of many of them prove the contrary. Some of the psalms were apparently written by Solomon; a few belong to the reigns of the kings immediately succeeding him; and several to the mournful days of the Babylonish captivity and of the return, especially those headed "for the sons of Korah," most of which are probably by the same author. Finally, a few seem to belong to the age of the Maccabees. The "Psalms of David," whether actually composed by him, or merely of his time, probably constituted an earlier collection, which extended to the seventy-second. But, by whomsoever penned, they are among the highest and sublimest efforts of poetry; and the holy light of revelation, the inspiring belief in the eternal true God, spreads over them a bright splendour, and fills them with a deep and holy fervour.

PSALTERY, a musical instrument used by the Hebrews, the true form of which is not now known. That which is now used is a flat triangular instrument, truncated at the top, and strung with thirteen chords of wire.

PSAMMITE, in mineralogy, a species of micaceous sandstone.

PSEU'DO, a prefix (from the Greek) used in the composition of many words to denote *false*, or *spurious*; as, a *pseudo*-apostle, or false apostle; a *pseudo*-prophet, or false prophet, &c.

PSO'AS, in anatomy, the name of two muscles, distinguished by the epithets *magnus* and *parvus*. The *psoas magnus* is one of the flexor-muscles of the thigh, and arises from the first, second, third, and fourth vertebræ of the loins. The *psoas parvus* is one of the flexor-muscles of the loins, which arises by a slender tendon from the os pubis, where it is joined to the ilium; and is inserted into the side of the upper vertebræ of the loins.

PSEUDO-METAL'LIC, in mineralogy, an epithet for a kind of lustre, which is perceptible only when held towards the light.

PSEUDOMORPH'OUS, an epithet given to a mineral which has received its form from some extraneous cause, not from natural crystalization.

PSEUDO-TINE'A, in entomology, a remarkable species of insect, resembling a moth. It feeds on wax, and being covered with a coat that is impervious to the stings of bees, will sometimes enter a hive and compel its industrious inhabitants to abandon it.

PSEUDO-VOLCA'NO, a volcano that emits smoke and flame, but no lava. A burning mine of coal is sometimes termed *pseudo-volcanic*.

PSITTACUS. [See PARROT.]

PSYCHOL'OGY, the doctrine of the nature and properties of the soul; or a treatise thereon.

PTARMIGAN, in ornithology, a fowl of the genus *Tetrao*. The colour of its plumage is a pale brown or ash, elegantly marked with dusky spots or minute bars, and the belly and wings white. This bird is occasionally seen on the summits of mountains in Scotland and the north of England.

PTOLEMA'IC SYSTEM, or the system of astronomy invented by Claudius Ptolemæus, a celebrated astronomer and mathematician of Pelusium, in Egypt, who lived

NAPOLEON ESTABLISHED A SCHOOL AT PARIS, UNDER THE NAME OF THE "PRYTANEE," WHERE SCHOLARS WERE EDUCATED BY THE STATE.

KING DAVID NOT ONLY COMPOSED SACRED SONGS FOR DIVINE WORSHIP, BUT ARRANGED THE MUSIC AND APPOINTED THE SINGERS.



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guage, and in the science, laws, and religion of that country.

PU'NIC, pertaining to the Carthaginians or their language. Also, a term implying treacherous, deceitful; as *punic* faith.

PUN'ISHMENT, the infliction of pain, or personal suffering according to law, for crimes; intended as an example, to deter others and to correct the offender. The punishment of crimes against the laws is inflicted by the supreme power of the state in virtue of the right of government, vested in the legislature, and belongs only to persons clothed with authority. Some punishments consist of exile or transportation, others in loss of liberty by imprisonment. Locke observes, "the rewards and punishments of another life, which the Almighty has established as the enforcements of his law, are of weight enough to determine the choice against whatever pleasure or pain this life can show."

PU'PA, in entomology, the *chrysalis* or quiescent state of an insect.

PU'PIL, in anatomy, the round aperture in the middle of the iris; the ball or apple of the eye, through which the rays of light pass to the crystaline humour, to be painted on the retina.——*Pupil*, one under the care of an instructor for education and discipline.

PUPIV'EROUS, feeding on the larvæ and crysalides of insects.

PURGATION, the act or operation of clearing one's-self of a crime; a mode of trying persons accused of any crime, which was formerly in practice.

PUR'GATORY, a supposed place or state after death, where, according to the Roman Catholics, the souls of the faithful are purified by fire from the sins which they carry with them out of this life, before they are admitted to a state of perfect bliss.

PURIFICATION, in religion, the act or operation of cleansing ceremonially, by removing any pollution or defilement. Purification by washing was common to the Hebrews and to Pagans; and the Mohammedans always use it previous to devotion.

PU'RIM, among the Jews, the feasts of lots, instituted to commemorate their deliverance from the machinations of Haman.

PU'RITAN, a name formerly given to the dissenters from the church of England, on account of their professing to follow the pure word of God, in opposition to all traditions and human institutions.

PUR'LIN, in architecture, a piece of timber extending from end to end of a building or roof, across and under the rafters, to support them in the middle.

PURPU'RA, in natural history, a genus of simple shells, having no hinge, formed of one continuous piece, and covered with spines and tubercles. The mouth is small, and approaches to a round figure: the clavicle is short, but the other extremity is usually protended to a considerable length.

PUR'PURE *(purple)*, in heraldry, is one of the five colours of armories, compounded of gules and azure, bordering on violet. It is represented in engraving by diagonal lines from right to left.

PUR'PURIC ACID, in chemistry, an acid produced by the action of nitric upon uric acid.

PUR'SER, in the navy, an officer on board a man-of-war, who takes charge of the provisions, and attends to their preservation and distribution among the officers and crew.

PUR'SUIVANT, in heraldry, the lowest order of officers at arms. The pursuivants are properly attendants on the heralds when they marshal public ceremonies.

PUS, the white or yellowish matter issuing from a sore, which usually precedes the healing, and in such cases is termed healthy or good pus. Examined in a microscope, it is found to consist of two parts, of globules, and a transparent colourless fluid. Its specific gravity is greater than that of water; exposed to heat, it evaporates to dryness, but does not coagulate.

PUTAMIN'EÆ, the twenty-fifth Linnæan natural order of plants, whose fruit is covered with a wooden shell, as the caper, &c.

PUTCHOCK, the root of a plant that grows abundantly in Sinde. When burned, it yields a fine smoke, and a grateful and diffusive smell. The Chinese beat it into a fine powder, which they burn as incense in the temples of their gods.

PUTREFACTION, the decomposition of animal and vegetable substances, the hydrogen creating an offensive smell, and the process tending to excite similar decomposition in other animal bodies; hence we have putrid and contagious fevers from this cause. It follows the acetous fermentation; the oxygen and hydrogen in the compound forming water, the nitrogen is expelled, and the carbon remains, the original substance being thus decomposed into its elements. Every living body, when deprived of life, performs a retrograde process, and becomes decomposed: this is called *fermentation* in vegetables, and *putrefaction* in animals.——*Antiseptic processes.* In curing provisions the ordinary means employed are, drying, smoking, salting, and pickling.—Grain of all kinds, as well as flour, may be preserved for an indefinite length of time, if they be kiln-dried, put up in vessels or chambers free from damp, and excluded from the air. Well-dried grain is not liable to the depredations of insects.—Fruits may be preserved in various ways. Pears, apples, plums, &c., should be gathered in a sound state, altogether free from bruises, and plucked in dry weather before they are fully ripe. One mode of preservation is, to expose them in an airy place to dry a little for eight or ten days, and then to lay them in dry sawdust or chopped straw, spread upon shelves in a cool apartment, so as not to touch each other. Another method consists in surrounding them with fine dry sand in a vessel which should be made air-tight and kept in a cool place.—Herbs, cabbages, &c., may be kept a long time in a cool cellar, provided they are covered with dry sand. Tuberous and other roots are better kept in an airy place, where they may dry a little without





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being exposed to the winter's frost.—A partial drying is given to various vegetable juices by evaporating them to the consistence of a syrup, called a *rob*, in which so much of the water is dissipated as to prevent them from running into fermentation. The fruits must be crushed, squeezed in bags to expel the juices, which must then be inspissated either over the naked fire, or on a water or steam bath, in the air or in vacuo: sometimes a small proportion of spices is added, to prevent mouldiness.

PUTTY, a kind of cement, made of whiting and linseed oil pounded together into a paste, which is used by glaziers in fastening the panes of glass, and also by painters in stopping crevices.

PUZZOLA'NA, in mineralogy, a loose porous volcanic substance or stone.

PYC'NITE, in mineralogy, sometimes called *shorlite*, or *shorlous topaz*. It usually appears in long irregular prisms or cylinders, longitudinally striated, and united in bundles.

PYC'NOSTYLE, in ancient architecture, a building where the columns stand very close to each other; only one diameter and a half of the column being allowed to each intercolumniation.

PYG'MY, an appellation given by the ancients to a fabulous race of beings said to inhabit Thrace, who waged war with the cranes and were destroyed. The word is now used to signify a *dwarf*.

PYL'AGORE, in ancient Greece, a delegate or representative of a city, sent to the Amphietyonic council.

PYLO'RUS, in anatomy, the right or lower orifice of the stomach, which is connected with and opens into the intestines.

PYRAL'LOLITE, a mineral of a greenish colour, recently discovered in Finland. It is both massive and in crystals.

PYR'AMID, a solid body standing on a triangular, square, or polygonal base, and terminating in a vertex or point at the top. Or, in other words, it is formed by the meeting of three or more planes at a point termed the apex.——The *Pyramids of Egypt* are noble monuments of Egyptian grandeur, about forty in number, near Memphis. The largest is 481 feet in height, measured perpendicularly, and the area of its base includes eleven acres.

PYR'AMOID, in geometry, a solid figure, formed by the rotation of a semi-parabola about its base or greatest ordinate.

PYR'ENITE, a mineral of a grayish-black colour, found in the Pyrenees, and considered as a variety of garnet.

PYRETOL'OGY, the doctrine of fevers, or a treatise on their nature, effects, &c.

PYREXI'Æ, in medicine, febrile diseases, the first class in Cullen's nosology.

PYRI'TES, or PYR'ITE, in mineralogy, a genus of inflammable substances composed of iron, in combination with sulphur, which is very extensively diffused. It occurs massive, disseminated, and frequently crystalized.

PYRO-ACE'TIC SPIRIT, in chemistry, a liquid obtained by subjecting to dry distillation the acetates of copper, lead, alkalies, and earths. It is very combustible, and burns with a brilliant flame without smoke. It is used for dissolving the gum-resins with which the bodies of hats are stiffened.

PYROLIG'NITE, in chemistry, a salt formed by the combination of pyroligneous acid with another substance.

PYROLIG'NOUS ACID, in chemistry, an acid obtained from beech and other woods by distillation, which is a liquid of the colour of white wine, of a strong acid and slightly astringent taste. It is an antiseptic, and serves instead of wood smoke (of which it is the principle) for preserving animal substances.

PYROLITHIC ACID, in chemistry, an acid obtained from the silvery white plates which sublime from uric acid concretions, when distilled in a retort.

PYROL'OGY, the natural history of heat, latent and sensible; or a treatise on that subject. A believer in the doctrine of latent heat is termed a *pyrologist*.

PYROMA'LATE, in chemistry, a compound of malic acid and a salifiable base.

PYROMA'LIC ACID, in chemistry, a substance obtained from the distillation of malic acid.

PYR'OMANCY, divination by fire.

PYROM'ETER, an instrument for measuring high temperatures, or degrees of heat, above those indicated by the mercurial thermometer; particularly the one invented by Mr. Wedgewood for determining the expansion of solid bodies by heat. This instrument is founded on the principle that clay progressively contracts in its dimensions in proportion as it is exposed to higher degrees of heat.

PYROPH'ORUS, in chemistry, a preparation from alum by calcination, which takes fire on exposure to the air.

PYRORTHITE, a scarce mineral, resembling orthite in appearance, but very different from it, for it burns in the flame of the blow-pipe like charcoal, whereas orthite melts.

PYR'OSCOPE, an instrument for measuring the pulsatory motion of the air, or the intensity of heat radiating from a fire.

PYROSM'ALITE, a Swedish mineral of a brown or greenish colour, occurring in six-sided prisms, of a lamellar structure.

PYROTAR'TRITE, in chemistry, a salt formed by the combination of pyrotartarous acid with another substance. The *pyrotartarous acid* is obtained by distilling pure tartrite of potash.

PYROTECH'NY, or PYROTECH'NICS, the science which teaches the management and application of fire in several operations, particularly in the construction of artificial fireworks.

PYR'OXENE, in mineralogy, a class of stones sometimes named *volcanic shorl*. It comprehends many substances of different appearances, but is almost always crystalised.

PYRRHO'NIANS, or PYRR'HONISTS, a sect of ancient philosophers, so called



SMOKED PROVISIONS KEEP BETTER THAN SUCH AS ARE MERELY DRIED, OWING TO THEIR IMPREGNATION WITH PYROLIGNOUS ACID.

GAS MADE FROM WOOD FUEL IS DEFICIENT IN CARBON AND HYDROGEN, AND IS THEREFORE ILL ADAPTED FOR ILLUMINATION.

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from Pyrrho, a native of Elis, in Peloponnesus. The opinions of these philosophers, who were also called *sceptics*, terminated in the incomprehensibility of all things, in which they found reason both for affirming and denying; they accordingly seemed to be always in search of truth, without ever acknowledging that they had found it: hence the art of disputing upon all things, without ever going farther than suspending our judgment, is called *pyrrhonism*.

PYTHAGOREANS, a sect of ancient philosophers, so called from being the followers of Pythagoras of Samos, who lived in the reign of Tarquin, the last king of Rome.——*Pythagorean system*, the system of astronomy taught by Pythagoras, which was founded on the hypothesis that the sun was a movable sphere situated in the centre, round which the other planets revolved. This is now called the Copernican system, because it was revived by Copernicus. [See ASTRONOMY.]

PYTHIA, or PYTHONESS, in antiquity, the priestess of Apollo, who delivered oracular answers at Delphi, in Greece.——*Pythian Games*, games celebrated at Delphi, every five years in honour of Apollo, as the conqueror of the *Python*, which, according to the mythological history, was a dreadful dragon that sprang from the mud left by the flood of Deucalion.

PYXIS, in anatomy, a name for the *acetabulum*, or hip-bone.——In the Romish church, a box or case in which is kept the consecrated host.

# Q.

Q, the seventeenth letter of the English alphabet, is not to be found either in the Greek, old Latin, or Saxon alphabets; is never sounded alone, but in conjunction with u, and never ends any English word. For qu in English, the Dutch use *kw*, the Germans *qu*, and the Swedes and the Danes *qv*. It appears, in short, that *q* is precisely *k*, with this difference in use, that *q* is always followed by *u* in English, and *k* is not. As a numeral Q stands for 500, and with a dash over, it stands for 500,000. Q is used as an abbreviation for *question*; it also stands for quantity, or *quantum*, as *q. pl. quantum placit*, as much as you please; and *q. s. quantum sufficit, i. e.* as much as is necessary. Among mathematicians, Q. E. D. stands for *quod erat demonstrandum*, that is, which was to be demonstrated; and Q.E.F. *quod erat faciendum*, which was to be done.

QUACHILTO, in ornithology, a Brazilian fowl of the moor-hen kind, of a fine black colour streaked and spotted with white. Its voice resembles the crowing of a cock.

QUACKERY, the boastful pretensions of an empiric or ignorant quack.

QUADRAGEME, a papal indulgence multiplying remissions by forties.

QUADRAGESIMA, Lent; so called because it consists of forty days.

QUADRANGLE, in geometry, a figure consisting of four sides and four angles.——In architecture, any range of houses or buildings with four sides in the form of a square.

QUADRANS, a farthing, or fourth part of a penny. Before the reign of Edward I. the smallest coin was a sterling, or penny, marked with a cross; by means of which a penny might be cut into halves and quarters; till, to avoid the fraud of unequal cuttings, that king coined halfpence and farthings in distinct round pieces.——*Quadrans* was also a division of the Roman *as*.

QUADRANT, in geometry, an arc of a circle, containing the fourth part, or ninety degrees, also, the space or area included between this arc and two radii drawn from the centre to each extremity.——*Quadrant*, in astronomy and navigation, an instrument for taking the altitudes of the sun and stars; as also for taking angles in surveying heights, distances, &c. Quadrants are of different forms, but the most esteemed is Hadley's quadrant, which consists of an octant, or the eighth part of a circle, the index, the speculum, two horisontal glasses, two screens, and two sight vanes.——There is also the *gunner's quadrant*, used for elevating and pointing cannon, mortars, &c.——*Quadrant of altitude*, a slip of brass of the length of a quadrant, graduated, and appended to the artificial globe. It serves as a scale in measuring altitudes, azimuths, &c.

QUADRANTAL, in geometry, a figure which is every way square, like a die.

QUADRAT, in printing, a piece of metal cast like the letters, to fill up the blank spaces at the ends of paragraphs, &c.

QUADRATE, or QUARTILE, in astrology, an aspect of the heavenly bodies, in which they are distant from each other ninety degrees, or the quarter of a circle.

QUADRATIC EQUATIONS, in algebra, those in which the unknown quantity is a square.

QUADRATRIX, in geometry, a mechanical line by means of which we can find right lines equal to the circumference of circles or other curves and their several parts.

QUADRATURE, in geometry, a fourth part; or a square equal in superficies to a circle.——*Quadrature of the Circle*, the finding some other right-lined figure equal to



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IN THE PYTHAGOREAN CREED THERE WERE THREE ORDERS OF INTELLIGENCES, GODS, DEMONS, AND HEROES, OF DIFFERENT DEGREES OF EXCELLENCE.

THE PYTHIA WAS AT FIRST REQUIRED TO BE A YOUNG GIRL; BUT IN LATTER TIMES SHE WAS A WOMAN OF FIFTY YEARS OF AGE.

LAZARETTOS ARE ESTABLISHED IN MANY COUNTRIES TO ASSIST IN THE PERFORMANCE OF QUARANTINE, AND THE FUMIGATION OF GOODS.

obeyed can save them; and that this light is Christ, the true light, which lighteth every man that cometh into the world:—that the Scriptures were indeed given by inspiration, and are preferable to all the other writings in the world; but that they are no more than secondary rules of faith and practice, in subordination to the light or spirit of God, which is the primary rule:—that immediate revelation has not ceased, a measure of the spirit being given to every one:—that all superstitions and ceremonies in religion, of mere human institution, ought to be laid aside:—that in civil society, the saluting one another by pulling off the hat, bending the body, or other humiliating posture, should be abolished; and that the use of the singular pronoun *thou* when addressing one person, instead of the customary *you*, should be strictly adhered to. They further laid it down as a solemn obligation, not to take an oath, encourage war, engage in private contests, nor even carry weapons of defence.—On a most vital question of Christian faith, one of their body has lately thus written: "Although 'Friends' do not call the Holy Scriptures the Word of God, but apply this epithet exclusively to the Lord Jesus Christ, yet they believe that these sacred writings are the *words* of God, written by holy men, as they were moved by the Holy Ghost; that they are profitable for doctrine, for reproof, for correction, for instruction in righteousness, that the man of God may be perfect, thoroughly furnished unto all good works; and that they are able to make wise unto salvation through faith which is in Christ Jesus. They also hold them to be the most perfect and authentic declaration of Christian faith, and the only fit outward standard in all religious controversies; and that whatever, either in doctrine or practice, any profess or do, though under pretence of the guidance of the Holy Spirit, if it be contrary to or inconsistent with, the testimony of the Holy Scriptures, is to be esteemed a delusion and error."—The society is governed by its own code of discipline, which is enacted and supported by meetings of four degrees, for discipline; namely, preparative, monthly, quarterly, and yearly meetings. The preparative digest and prepare the business for the monthly meetings, in which the executive power is principally lodged, subject however to the revision and control of the quarterly meetings, which are subordinate and accountable to it, and subject to its supervision and direction. Its authority is paramount, and it possesses the sole power to make or amend the discipline. There are at present ten yearly meetings, namely, London, Dublin, New England, New York, Philadelphia, Baltimore, Virginia, North Carolina, Ohio, and Indiana, which include a total of about 150,000 members.

QUALIFICA'TION, any natural endowment, or any acquirement which fits a person for a place, office, or employment.—Also any property or possession which gives one a right to exercise the elective franchise, or furnishes one with any legal power or capacity.

QUA'LITY, in physics, that property belonging to a body which affects our senses in such a manner that it may be distinguished.——*Essential qualities* are such as are necessary to constitute a thing what it is.

QUAN'TITY, in physics, anything capable of estimation or mensuration, which being compared with another thing of the same nature, may be said to be greater or less, equal or unequal to it.——In common usage, *quantity* is a mass or collection of matter of indeterminate dimensions; thus we say, a *quantity* of earth, a *quantity* of timber, &c. But when we speak of an assemblage of individuals or separate beings, we say a *number*; as a *number* of men, of horses, &c.——In mathematics, anything which can be multiplied, divided, and measured.——In grammar, the measure of a syllable, or that which determines the time in which it is pronounced.

QUAN'TUM [Lat.], the quantity.——*Quantum meruit* (as much as he deserved), in law, an action grounded on a promise that the defendant would pay to the plaintiff for his service as much as he should deserve.——*Quantum valebat*, an action to recover of the defendant for goods sold, as much as they were worth.

QUAR'ANTINE, the restraint of intercourse to which a ship arriving in port is subjected, on the presumption that she may be infected with a malignant, contagious disease. This is either for forty days, or for any other limited term, according to circumstances. A ship thus situated is said to be *performing quarantine*. The term is derived from the Italian *quarante*, forty; it being generally supposed that if no infectious disease break out within forty days, or six weeks, no danger need be apprehended from the free admission of the individuals under quarantine. During this period all the goods, clothes, &c. that might be supposed capable of retaining the infection, are subjected to a process of purification, which is a most important part of the quarantine system.——In law, the period of forty days, during which the widow of a man dying possessed of land, has the privilege of remaining in the principal messuage or mansion house.

QUAR'RY, a pit or cavern where stones for building, &c. are dug from the earth; as a freestone quarry, or a marble quarry.——In falconry, the game which a hawk is pursuing or has killed.——Among hunters, a part of the entrails of the beast taken, given to the hounds.

QUAR'TAN, in medicine, an intermitting ague that occurs every fourth day.

QUARTA'TION, in chemistry, the operation by which the quantity of one thing is made equal to the fourth part of another thing.

QUAR'TER, the fourth part of anything, the fractional expression for which is ¼.——*Quarter*, in weights, is generally used for the fourth part of a hundred weight

THE VENETIANS WERE THE FIRST WHO ENDEAVOURED TO GUARD AGAINST THE PLAGUE, BY OBLIGING SHIPS, &c. TO PERFORM QUARANTINE.



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avoirdupois, or 28lb.——*Quarter*, in astronomy, the fourth part of the moon's period or monthly revolution: thus, from the new moon to the quadrature is the first quarter; from this to full moon, the second quarter, &c. Also, a region in the hemisphere or great circle, or one of the four cardinal points: as the four *quarters* of the globe. ——*Quarter*, in naval architecture, that part of a ship's hull which lies from the steerage to the transom.——On ship-board, *quarters* signifies the stations or places where the officers and men are posted in action.——*Quarters*, in war, is used in various senses, viz. the place allotted to a body of troops to encamp upon: thus they say, the general has extended his *quarters* a great way, &c. *Quarter* also signifies the sparing of men's lives when they are no longer able to defend themselves.—— *Head-quarters*, the place where the general of an army resides, which is generally near the centre of the army.——*Winter quarters*, the places in which the troops are lodged during the winter, or their residence in those places. ——*Quarter-deck*, that part of the deck of a ship which extends from the stern to the mainmast.—— *Quarter-gallery*, a sort of balcony on the quarters of a ship.——*Quarter-master*, in the army, an officer whose business is to attend to the quarters of the soldiers, their provisions, &c. In the navy, an officer who assists the mates in their duties, attending the steerage, &c.——*Quarter-master-general*, a military officer whose duty is to mark the marches and encampments of an army, the head quarters, and procure supplies of provisions, forage, &c.

QUARTER DAYS, the days which begin the four quarters of the year, namely, the 25th of March, or Lady Day; the 24th of June, or Midsummer Day; the 29th of September, or Michaelmas Day; and the 25th of December, or Christmas Day.

QUARTERING, in heraldry, partitions of the escutcheon according to the number of coats that are borne in it, or the several divisions that are made when the arms of more than one family are borne by the same person.

QUARTER SESSIONS, a court of justice, held quarterly, before magistrates of the district to try minor offences by jury, after bills found by a grand jury. The legal powers of these are often very great, but the questions may in many cases be removed to superior courts.

QUARTETTO, in music, Italian for a piece for four voices or four instruments.

QUARTO, in printing and bookbinding, a size made by twice folding a sheet, which then makes four leaves. A book so folded.

QUARTZ, in mineralogy, a species of siliceous stones, of various colours; commonly amorphous, and frequently crystalized. It is abundantly spread throughout the globe, in most comprehensive in its varieties, and the tinges it receives from metals are sufficient to produce those varieties of colour seen in this mineral. Thus, amethyst, or purple quartz, is tinged with a little iron and manganese. Rose quartz, or false ruby, derives its colour from manganese. Avanturine is a beautiful variety of quartz, of a rich brown colour, which, from a peculiarity of texture, appears filled with bright spangles. Small crystals of quartz, tinged with iron, are found in Spain, and have been termed hyacinths of Compostella. Fliut, chalcedony, carnelian, onyx, sardonyx, and bloodstone, or heliotrope, and the numerous varieties of agates, are principally composed of quartz, with various materials from which they derive their particular hue.

QUAS, a liquor commonly drank in Russia. It is prepared from pollard, meal, and bread, or from meal and malt, by an acid fermentation.

QUASH (or, as it is common to pronounce it in America, SQUASH), a species of cucurbita or gourd.

QUASH'ING, in law, the overthrowing and annulling of anything: as, to *quash* an indictment.

QUA'SI CON'TRACT, in the civil law, an act which has not the strict form of a contract, but yet has the force of one. Thus, if one person does another's business in his absence, without his procuration, and it has succeeded to the other person's advantage; the one may have an action for what he has disbursed, and the other to make him give an account of his administration; which amounts to a *quasi contract*.

QUASSIA, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*.—— The wood of the root of the *Quassia* tree is intensely bitter, and a decoction from it is used in medicine. Our public brewers have been often charged with using it as a substitute for hops, but it is now prohibited under severe penalties.

QUATREFOIL, in heraldry, four-leaved grass, a frequent bearing in coat armour.

QUAVER, in music, a measure of time equal to half a crotchet, or an eighth of a semibreve. Also a shake or rapid vibration of the voice.

QUEEN, a woman who holds a crown singly; or, by courtesy, one who is married to a king. The former is distinguished by the title of *queen regnant*; the latter by that of *queen consort*. A queen consort is a subject, though as the wife of the king she enjoys certain prerogatives. The widow of a king is called a *queen dowager*.

QUERCITRON, the bark of the *Quercus nigra*, or yellow oak, a tree growing in North America. It is used in dyeing yellow, the colour being developed from it by a solution of alum.

QUERCUS, in botany, the oak tree, of which there are twenty-six species, besides varieties. The *Quercus robur* attains to a great size, and is distinguished from other trees by its sending off, horizontally, immense branches. The *Quercus suber*, or cork-tree, is found chiefly in Spain. The exterior bark is the cork, which is taken from the trees every eight or ten years without in the least injuring them.

QUESTIONIST, a candidate for a bachelor's degree at Cambridge.



THE YELLOW QUARTZ IS ONE OF THE MOST FREQUENT STONES EMPLOYED FOR WATCH SEALS, AND IS CALLED TOPAZ BY THE JEWELLERS.

THE DUTY ON QUASSIA IS 8l. 17s. 6d. PER CWT. (ABOUT SIX TIMES ITS VALUE), BEING INTENDED BY THE LEGISLATURE TO BE PROHIBITORY.

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QUEST'-MEN, in law, persons chosen to inquire into abuses and misdemeanours, especially such as relate to weights and measures.

QUES'TUS, in law, land which does not descend by hereditary right, but is acquired by one's own labour and industry.

QUICK-LIME, any calcareous substance deprived of its fixed or carbonic air, or an earthy substance calcined; as, chalk, lime-stone, oyster-shells, &c.

QUICK-MATCH, a combustible preparation used by artillerymen; being formed of cotton strands dipped in a boiling composition of vinegar, saltpetre, and mealed powder.

QUICK'SILVER, a metal so remarkable for its fluidity, as to be congealable only with the inteuse cold indicated by 39° or 40° below zero on Fahrenheit's thermometer. [See MERCURY.]

QUID PRO QUO, in law, an equivalent, or the mutual consideration and reciprocal performance of both parties to a contract.

QUI'ETISTS, in ecclesiastical history, a sect of mystics, originated by Molino, a Spanish priest, who maintained that religion consists in the internal rest and meditation of the mind, wholly employed in contemplating God and submitting to his will. This doctrine was termed *quietism*. Rarely as these precepts of quietism can be put in practice, because they comport neither with the wants of human nature nor the demands of our social condition, they have, nevertheless, frequently re-appeared in the mysticisms of later sects.

QUINCE, in botany, the fruit of the *Pyrus cydonia*, so named from Cydonia, a town of Crete, famous for abounding with this fruit. It is now cultivated throughout Europe, and when boiled and eaten with sugar, or made into marmalade, is much esteemed.

QUIN'CUNX, in gardening, the term for a method of planting trees, which are disposed in a square (one at each corner, with one in the centre), thus : · : This repeated indefinitely forms a regular grove or wood, which viewed by an angle of the square or parallelogram, presents equal rows or parallel alleys.——In astrology, an aspect in which the planets are five degrees distant from each other.

QUINDEC'AGON, in geometry, a plain figure with fifteen sides and fifteen angles.

QUINDE'CEMVIR, or QUINDECEM'VIRI, in Roman antiquity, a college of fifteen magistrates, whose business it was to preside over the sacrifices. They were also the interpreters of the Sibyl's books; which, however, they never consulted but by an express order of the senate.

QUINI'NA, or QUINI'NE, a preparation from Peruvian bark, which is highly esteemed and used to a great extent in the materia medica. *Quinina* and *cinchonina* are two vegetable alkalies extracted from Peruvian bark or cinchona: the pale bark containing most cinchonina, and the yellow bark most quinina. The extensive sale and high price of sulphate of quinine, have given rise to many modes of adulteration, the detection of which belongs to the practical chemist.

QUINQUAGENA'RIUS, in Roman antiquity, an officer who had the command of fifty men.

QUINQUAGES'IMA, or Shrove Sunday, so called as being about the fiftieth day before Easter.

QUINQUA'TRIA, in Roman antiquity, festivals celebrated in honour of Minerva with much the same ceremonies as the Panathenæa were at Athens.

QUINQUENNA'LIA, in antiquity, Roman games that were celebrated every five years.

QUIN'QUIREME, in antiquity, a galley having five seats or rows of oars.

QUIN'SEY, or QUIN'SY, in medicine, a species of angina, or inflammation of the throat, with difficult respiration, &c.

QUINTES'SENCE, in chemistry, a preparation consisting of the essential oil of a vegetable substance, mixed and incorporated with spirit of wine.——In a more general sense, an extract from anything, containing its virtues or most essential part in a small quantity.

QUIN'TILE, in astronomy, the aspect of planets when distant from each other the fifth part of the sodiac, or 72 degrees.

QUINTILIS, in chronology, the month of July, so called because it was the fifth month of Romulus's year, which began in March. It received the name of July from Marc Antony, in honour of Julius Cæsar, who reformed the calendar.

QUIN'TIN, in ancient martial sports, an upright post on the top of which turned a cross piece, on one end of which was fixed a broad board, and on the other a sand-bag. The play was to tilt or ride against the broad end with a lance, and pass without being struck by the sand-bag behind.

QUIRINA'LIA, in antiquity, a feast celebrated among the Romans in honour of Romulus, who was called *Quirinus*. These feasts were held on the 13th of the calends of March.

QUIRI'TES, in antiquity, a name given to the populace of Rome, as distinguished from the soldiery.

QUI-TAM, in law, a term for an action brought, or information exhibited, at the suit of the king, on a penal statute, wherein half the penalty is directed to fall to the suer or informer.

QUIT-RENT, in law, a small rent payable by the tenants of most manors, whereby they go quit and free from all other services.

QUIT'TER-BONE, in farriery, a hard round swelling on the coronet, between the heel and the quarter, usually on the inside of the foot.

QUOAD HOC, a term used frequently in law reports to signify that "as to the thing named," the law is so, &c.

QUOD PERMITTAT, in law, a writ for the heir of him that is disseised of common of pasture, against the heirs of the disseisor.



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QUOIN, or COIN, on shipboard, a wedge fastened on the deck close to the breech of the carriage of a gun, to keep it firm up to the ship's side, &c.——*Quoins*, in architecture, the corners of brick or stone walls. The word is particularly used for the stones in the corners of brick-buildings. When these stand out beyond the brick-work, their edges being chamfered off, they are called *rustic* quoins.

QUOITS, a kind of exercise or game very similar to the one known among the ancients under the name of *discus*. It consists in pitching or throwing a flat iron ring or kind of horse-shoe at a fixed object.

QUO JU'RE, in law, a writ that lies for a person who has lands wherein another claims common of pasture time out of mind; and is brought in order to compel the person to show by what title he challenges it.

QUO'RUM, in law, a word frequently mentioned in our statutes, and in commissions both of justices of the peace and others. By it is generally understood, such a number of justices as are competent by law to transact business. The term is derived from the words of the commission, *quorum* A. B. *unum esse volumus*. For example, where a commission is directed to seven persons, or to any three of them, whereof A. B. and C. D. are to be two, these are said to be of the *quorum*, because the rest cannot proceed without them.

QUO'TA, in law, a share or contribution.

QUOTIDI'AN, in medicine, an intermitting fever, or ague, of which the paroxysm or fit returns every day.

QUO'TIENT, in arithmetic, the number which arises, by dividing the dividend by the divisor; or, in other words, the number resulting from the division of one number by another.

QUO-WARRAN'TO, in law, the name of a writ which lies against any particular persons, or bodies politic or corporate, who usurp or make an improper use of any franchise or liberty, in order to oblige them to show by what right and title they hold or claim such franchise.

# R.

R, the eighteenth letter of our alphabet, is numbered among the liquids and semivowels, and is sometimes called the *canine* letter. Its sound is formed by a guttural extrusion of the breath, which in some words is through the mouth, with a sort of quivering motion or slight jar of the tongue. In words which we have received from the Greek language we follow the Latins, who wrote *h* after *r*, as the representative of the aspirated sound with which this letter was pronounced by the Greeks; as in *rhapsody, rhetoric, &c.*; otherwise it is always followed by a vowel at the beginning of words and syllables. As an abbreviation, R in English, stands for *rex* and *regina*; as George R.; Victoria R. In the notes of the ancients, R. or RO. stands for *Roma*; R.C. *Romana civitas*; R.G.C. *rei gerendæ causa*; R.F.E.D. *recte factum et dictum*; R.G.F. *regis filius*; R.P. *respublica*, or *Romani principes*. As a numeral R, in Latin authors, stands for 80, and with a dash over it, for 80,000.

RAB'BET, in carpentry, a deep groove or channel cut in a piece of timber longitudinally, to receive the edge of a plank, or the ends of several planks, that are to be fastened therein.——*Rabbeting*, the paring down the edge, or cutting channels or grooves in boards, for the purpose of lapping one over the other. In ship-carpentry, it signifies the letting in of the planks of the ship into the keel.

RAB'BI, or RAB'BIN, a title assumed by the pharisees and doctors of the law among the Jews, which literally signifies master or lord. There were several gradations before they arrived at the dignity of a rabbin; but it does not appear that there was any fixed age or previous examination necessary; when, however, a man had distinguished himself by his skill in the written and oral law, and passed through the subordinate degrees, he was saluted a rabbin by the public voice. In their schools the rabbins sat upon raised chairs, and their scholars at their feet: thus St. Paul is said to have studied at the feet of Gamaliel. Such of the doctors as studied the letter or text of scripture were called *caraites*, those who studied the cabbalia, *cabbalists*, and those whose study was in the traditions or oral law, were called *rabbinists*. The customary duty of the *rabbins*, in general, was to pray, preach, and interpret the law in the synagogues. Among the modern Jews, the learned men retain no other title than that of *rabbi*; they have great respect paid them, have the first places or seats in their synagogues, determine all matters of controversy, and frequently pronounce upon civil affairs.

RAB'BIT, in zoology, the *Lepus cuniculus* of Linnæus, a well-known animal of the hare kind, which feeds on grass or other herbage and grain, and burrows in the earth. It is a very prolific animal, and is kept in warrens for the sake of its flesh.

RAB'DOMANCY, in antiquity, a sort of divination by means of rods, according to their manner of falling when they were set up.

RA'CA, a Syriac word signifying empty, foolish, beggarly; a term of extreme con-

THE IRISH GIVE TO THE LETTER *r* A PECULIAR ROLLING SOUND, BY DRAWING THE TONGUE TOO FAR BACK AGAINST THE ROOF OF THE MOUTH.

THE VULGAR COCKNEY PRONUNCIATION OF THE *r* RESEMBLES THE AMERICAN, AS IN THE WORD "MORNING," WHICH THEY CALL "MAWRNE."



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tempt. The Jews used to pronounce the word with certain gestures of indignation, as spitting, turning away the head, &c. Our Saviour (Matth. v. 22.) intimates that whosoever should call his neighbour *raca*, should be condemned by the council of the Sanhedrim.

RACCOON', in zoology, an American quadruped of the genus *Ursus*. It is somewhat of the shape of a beaver, with hair like that of a fox; its head, too, resembles the fox, except that the ears are shorter, roundish, and naked; its tail is longer than its body, and not unlike that of a cat, with annular streaks of different colours. This animal lodges in a hollow tree, and feeds on vegetables: its fur is deemed valuable, and its flesh is esteemed a palatable food.

RACE, the lineage of a family, or the series of descendants indefinitely continued. All mankind are called the *race* of Adam; the Israelites are of the *race* of Abraham; and in like manner, we say, the Capetine or the Carlovingian *race* of kings, &c.

RA'CEME, in botany, a species of inflorescence, consisting of a peduncle with short lateral branches. It may be either simple or compound, naked or leafy, &c. ——*Racemous*, growing in clusters. *Racemiferous*, bearing racemes or clusters; as, the racemiferous fig-tree.

RACES, in the usual acceptation, signify public trials of the speed of horses. They were customary in England in very early times, and are mentioned by Fitz-Stephen in the reign of Henry II. In queen Elizabeth's time they appear to have been carried to such excess as to have injured the fortunes of the nobility. At that time, however, the matches were private, and gentlemen rode their own horses. In the reign of James I. public races were established; but it was not till after the restoration of Charles II. that it was particularly encouraged by royalty, when "his majesty's plate," a cup or bowl worth 100 guineas was first given, in lieu of which that sum of money is now paid. The usual trial of speed, in English racing, is a single mile; of continuance or bottom, four miles; but the true test of thorough blood in a racer is continuance. There is a great deal of fraud practised in the whole business of racing; and, as in every other species of gambling, the wealthy who addict themselves to the sport, generally in the end become the victims of a host of black-legs and their confederate jockies.—There are few amusements more exhilarating; and as the period of the races generally serves as a rendesvous for persons of rank and fashion, the scene, independent of the sport itself, is one of gaiety and pleasure.——Among the ancients, horse-races were performed either by single horses, or by two horses, on one of which they performed the race, and leaped upon the other at the goal. Chariot-races were performed by one, two, three, four, five, or more horses joined together in chariots. How great soever the number of horses might be, they were all ranged abreast, or in one front, being coupled together in pairs. Cliathenes, the Sicyonian, introduced the custom of coupling the two middle horses only; the rest he governed by reins. The principal part of a charioteer's skill consisted in dexterously avoiding the *mete*, or goals; a failure in this point overturned his chariot, which was an event that was attended not only with imminent danger, but also with great disgrace. We read that Nero, at the Olympic games, made use of a *decemjugis*, or chariot drawn by ten horses. He also used camels in the Roman circus; and Heliogabalus introduced elephants instead of horses. The most remarkable circumstance relating to the Roman chariot-races, was the factions of the charioteers, which divided into parties the whole city of Rome.

RACHI'TIS, in medicine, the rickets [which see].

RACK, a horrid engine of torture, furnished with pullies and cords, &c. for extorting confession from criminals or suspected persons. Its use is entirely unknown in free countries.

RACK'ET, a bat to strike the ball with at tennis, usually consisting of a net-work of catgut strained very tight in a circle of wood, with a handle.

RA'DIAL, in anatomy, pertaining to the *radius* or fore-arm of the human body; as, the *radial* artery or nerve. The *radial muscles* are two muscles of the fore-arm, one of which bends the wrist, the other extends it.——*Radial curves*, in geometry, curves of the spiral kind, whose ordinates all terminate in the centre of the including circle, and appear like so many semi-diameters.

RA'DIATE, or RA'DIATED, in botany, are such flowers as have several semi-floscules set round a disk, in form of a radiant star: those which have no such rays are called *discous* flowers.

RADIA'TION, the act of a body emitting or diffusing rays of light all round, as from a centre. Though every visible body be radiating, yet it need not be luminous in itself, but only illuminated; that is, it may diffuse rays received from a luminous body, as well as emit those of its own.——*Radiating point*, in optics, any point of a visible object from whence rays proceed.

RAD'ICAL, in general, something that serves as a basis or foundation; as, a *radical* truth or error.——In grammar, the appellation *radical* is given to primitive words, in contradistinction to compounds and derivatives.——*Radical*, in chemistry, a simple constituent part of a substance, which is incapable of decomposition. Also, the distinguishing part of an acid, that which unites with oxygen, and is common to all acids.——*Radical quantities*, in algebra, quantities whose roots may be accurately expressed in numbers.——*Radicals*, in politics, an epithet applied to the ultra-democrats of Great Britain.

RADICATION, in botany, the disposition of a root of a plant with respect to the ascending and descending caudex and the radicles.



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THE MOST CELEBRATED RACES TWO CENTURIES AGO WERE CALLED BELL-COURSES, THE PRIZE OF THE WINNER BEING A BELL.

THE VISIBLE RADIATIONS FROM HEATED BODIES ARE REFLECTED LIKE LIGHT, BUT THEY DO NOT PASS THROUGH TRANSPARENT BODIES.

RAD'ICLE, in botany, that part of the seed of a plant which, upon vegetating, becomes the root.

RADIOM'ETER, an instrument for taking the altitudes of celestial bodies.

RAD'ISH, in botany, a plant of the genus *Raphanus*, which is eaten raw.

RA'DIUS, in geometry, a right line extending from the centre of a circle to the periphery, and hence the semidiameter of the circle.——In trigonometry, the *radius* is the sine of 90 degrees.——In anatomy, the exterior bone of the fore-arm, descending along with the ulna from the elbow to the wrist.——In botany, the outer part or circumference of a compound radiate flower, or radiated discous flower.

RA'DIUS-VEC'TOR, in astronomy, a line drawn from the sun to the orbit of a planet, the orbit being varied in distance by the varied re-action of the planet to the uniform actions of the sun.

RA'DIX, in etymology, a primitive word from which spring other words.——In algebra, *radix* sometimes denotes the root of a finite expression, from which a series is derived.——In logarithms, that number whose logarithm is unity.——In botany, a root, or that organ of a vegetable through which it draws its nourishment. [See Botany.]

RAFT, a sort of float consisting of boards fastened together side by side, a mode of conveying timber by water.

RAFT'ERS, the pieces of timber extending from the plate of a building, so as to meet in an angle at the top, and form the roof.

RAGOUT (pron. *ragoo'*), a high seasoned dish, or a compound in cookery, for exciting a languid appetite.

RAG'STONE, in mineralogy, a rough stone of the siliceous kind. It is of a gray colour and fibrous texture, the lamine consisting of a congeries of coarse grains. It is used for a whetstone without oil or water, for sharpening coarse cutting tools.

RAGU'LED, in heraldry, an epithet for any bearing that is ragged or uneven, like the trunk or limb of a tree lopped of its branches, so that only the stumps are seen.

RAIL, in ornithology, a bird of the genus *Rallus*, consisting of many species. The greater part of them inhabit the margins of rivers and ponds covered with marshy and aquatic plants.——Also, a name given to pieces of scantling used in making fences; or the pieces into which balusters are inserted. But the word *railing* is more generally used.

RAILWAYS, or RAILROADS. Among the most wonderful features which mark the progress of science in the nineteenth century, is the vast and increasing extent of the substitution of mechanical for animal power—ingenious in most operations, exciting our admiration in many, but excelling all in its application to the purposes of travelling. It was in 1801 when the first railway act received the sanction of the British legislature; we allude to the incorporation of the Surrey Iron Railway Company—a trifling affair indeed, viewed, as we needs must view it now, in comparison with the prodigious works around us; for it extended only from Wandsworth to Croydon, and was merely applicable for the carriage of coals, lime, &c., the moving power being from horses alone. But a new era was approaching. The civilised nations had no sooner sheathed the sword of war, than they exerted their energies in the cultivation of the arts of peace, and in the advancement of science. With giant strides work after work proceeded; the elements, so to speak, were made subservient to man's controlling power; till at length the ponderous machines, impelled by the irresistible force of steam, whirled along with a velocity which defies competition, and almost mocks the sight.—The species of rail first employed was a broad surface of cast iron, sufficient to support the rim of a common cart or carriage; these are called plate or *tram* rails, and such rails are very useful, where the carriages that pass over them have occasionally to traverse common roads. But another species of rail is now universally employed, where the carriages have to pass only over the railway; these are called *edge* rails, and are distinguished from the former by being much narrower on the upper surface. On the edge railway very narrow wheels are used on the carriages, the breadth of the rail not in general exceeding two inches, and the carriage is kept on the way by means of flanges on the outer part of the rim of the wheel. These flanges ought never to touch the rail on account of the great resistance they cause; and a better plan is now adopted in forming the carriage wheels bevelled on the rim, so that the exterior diameter is less than the interior. The rails are fashioned in bars commonly three feet in length, fastened at each end upon the sleepers. They are usually of the fish-bellied shape, thicker in the middle than at the ends; but although theoretically this may appear the best fitted for the purpose, experience has shown that a straight rail is equally strong, and has this great advantage, that the cost is much less from the greater ease in making. Cast iron rails are at first much cheaper than malleable iron ones, but not in the end; for not only are malleable rails more durable than those made of cast iron, but malleable rails when in use are less susceptible to the deteriorating action of the atmosphere than the same rails would be if unused.——*Inclined planes.* Where the inclination of the road is greater than that for which the ordinary power is calculated, the ascent must be effected by means of an additional power, the amount of which can be readily computed, since, in those parts, no additional friction of the cars or wheels is to be provided for, and only the additional resistance arising from gravity is to be overcome. If, for instance, the additional inclination is one in ninety-six, or fifty-five feet in a mile, the additional power must be to the weight as one to ninety-six, or as fifty-five to the number of feet in a

A MAN IS BETTER ENABLED, BY THE DISPOSITION OF HIS LIMBS, TO CARRY A WEIGHT UP A STEEP HILL, THAN A HORSE IS.

TO DRAG A LOADED WAGGON UP A MODERATE HILL REQUIRES MORE FORCE THAN TO PROPEL IT THIRTY MILES ALONG A LEVEL RAILWAY.



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A STEAM-ENGINE CONSUMES ABOUT TWENTY FEET OF STEAM PER MINUTE FOR EVERY HORSE POWER.

mile, namely, 5280. In descending planes, so much inclined that the gravity would move the carriages too rapidly for safety, the velocity is checked by means of a break, which consists of a piece of wood of the same curvature as the rim of a set of the wheels, upon which the break is pressed by means of a lever, so adjusted as to be within reach of the conductor, in his position on the carriage.——*Power.* Where the road is sufficiently and uniformly descending in one direction, gravity may be relied upon as a motive power in that direction; but on railroads generally, some other power must be resorted to in each direction. It was at first a great question as to whether stationary or locomotive steam-engines should be used, but after various experiments locomotives were preferred; and the opinion in favour of this kind of power on roads of which the inclination does not exceed about thirty feet in a mile, has become pretty fully established. Stationary power can be used to advantage only on lines of very great transportation, as the expense is necessarily very great, and almost the same whether the transportation be greater or less. Another objection to the use of stationary power is, that its interruption, in any part, breaks up the line for the time, which is not necessarily the case with a locomotive. The alternative, accordingly, is between the use of locomotive steam-engines or horses; and the fact seems well established, that where the transportation is sufficient for supplying adequate loads for locomotive engines, and where the road is so constructed that they can be advantageously used, and where fuel is not exceedingly expensive, they afford much the most economical motive power.——It would be futile in a work of this nature to attempt any thing more than a cursory notice of so vast a subject; several works being regularly published for the express purpose of affording all the necessary information. We will therefore just place before the reader a statement or two that lie in our way, by which he will be enabled to form his own opinion of the magnitude and importance of railways in general:——*The London and Birmingham Railway* was opened throughout on September 17, 1838: the first train completing the distance, 112¼ miles, in four hours and fourteen minutes; and the second train, carrying 200 passengers, in about six hours. The entire cost of this railway is about 5,000,000*l.*; one of its most laborious works is the Kilsby Tunnel, 2498 yards in length, the expense of which is stated at 400,000*l.* With the exception of the inclined plane between Euston Grove and Camden Town, the least favourable inclination is equal to only one in 330, or sixteen feet in a mile; only about thirteen miles of the road are perfectly level, the remainder forming a series of inclined planes; and the station at Birmingham is 280 feet above the level of the London station. The cost of the iron rails is stated at 460,000*l.*; their weight, 35,000 tons; cost of stone blocks, 180,000*l.*; weight, 152,460 tons: total excavations, 15,000,000 cubic yards.——The following statement of the total number of passengers conveyed on various lines of railway in the year 1838 is taken from the second report of the committee of the House of Commons:—Liverpool and Manchester, 609,336; Grand Junction, 445,290; London and Birmingham, 459,385; London and Greenwich, 1,544,266; Newcastle and Carlisle, 196,051; Stockton and Darlington, 228,946; Dundee and Newtyle, 59,682; Durham and Sunderland, 77,439; Edinburgh and Dalkeith, 299,201; Garnkirk and Glasgow, 128,373; Leeds and Selby, 90,637; Leicester and Swannington, 23,053; Paisley and Renfrew, 143,180; Dublin and Kingstown, 1,141,679; Bolton and Leigh, 86,230. We ought not, perhaps, to close this article without observing, that not only in this country, but in France, Belgium, Italy, Germany, nay, over the whole of the European continent, and on an infinitely more extended scale in the United States of America, are railroads every where in progress. With regard to the latter, many circumstances conspire to assist in the construction of these roads—the alluvial plains, which often present a dead level for a hundred miles together, the great plenty of timber, and, more than all, the non-appropriation of the ground, which enables the projectors to buy it for a trifle, and, in the majority of cases, to get it for nothing. "They have pushed these roads (says a writer in the Leicester Mercury, and copied into the Mechanic's Magazine) into the very bosom of the wilderness. Like the military roads of the Romans, they hold steadily and straight on through plain and morass, through lane, forest, and river, and across the rugged Alleghanies, and the wild woods that skirt the banks of the Mohawk; and where, a few years since, an Indian hunter could scarcely force his way, you now dash along at the fearful velocity of twenty miles an hour. Many of these roads have been finished for less than 6000 dollars a mile; the very best of them, made of English iron, and laid down on stone sleepers, have been completed for 29,000 dollars a mile, or about 6000*l.*, which is only one-seventh the cost of the Liverpool and Manchester. The same method and dexterity which marks their steam-boat travelling, is also seen here: the engines are nearly all of American construction, having superseded those imported from England, and the engineers seem to have them under better control. There is certainly no unnecessary expense about these railroads. The sleepers are often not filled up, and frequently, in passing a deep chasm, or rushing torrent, the bridge is only just wide enough for the rails. Most of these railroads are at present single tracks, which occasion delay when trains meet. The carriages are larger than ours, they are sometimes fifty feet long, and have a deck with verandas. I have often remarked, that American engineers seem more dextrous than English. I have seen a train going seventeen miles an hour stopped in forty

AT SPEEDS OF RAILWAYS THE PROVINCIAL POWER WILL IN TIME BECOME LIKE SO MANY STUDENTS OF THE METROPOLIS.



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IN HIGH-PRESSURE ENGINES THE STEAM IS NOT CONDENSED; IN LOW-PRESSURE ENGINES IT IS CONDENSED IN A SEPARATE VESSEL.

yards. The engine carries a large shovel in front, which removes any obstacle lying on the rail. Riding on the engines of a Washington train at night, I saw a cow lying on the rails; before I could exclaim, we were upon her, and I expected a shock, instead of which, the shovel picked her up, carried her a few yards, and then threw her to the roadside, out of the way. I took many opportunities of riding on the engines—wood is burned in most of them—anthracite coal in few. Their cylinders are mostly horizontal, like our own; but I saw several where the cylinders were vertical. There is a fine road from Albany, on the Hudson, to Utica, ninety miles. This road, in a few months, will reach to Buffalo, on the Lake Erie, and then a traveller may pass from New York to Niagara, in twenty-four hours. There are railroads throughout all the New England States to every town of importance, and some thousand miles in progress in the south and west. There is the least improvement in the slave states. There is no country where you can cross such vast tracts in so short a time as in America, and the facilities are every day increasing. The Ohio already joins the Delaware, by a railroad 350 miles long, and in a few years a traveller may be able to pass from the gulf of Newfoundland to the gulf of Mexico—from icebergs to orange-groves—in six days."

RAILWAY, Atmospheric or Pneumatic.—This invention is yet in its infancy; nor has it been satisfactorily proved that it can be brought to such perfection as was at first imagined, the opinions of scientific men being at present much divided on the subject. A great dispute has also arisen as to the priority and right of invention to this means of railway transit; Mr. Pinkus and Mr. Vallance contending that they brought it to useful working order before Mr. Clegg and his co-patentee Mr. Samuda. The whole secret of the pneumatic system of railway is in the means by which the power obtainable within a close tube or tunnel, by the rarefaction of the inclosed column of air, is communicated to a train of carriages on the outside throughout its longitudinal extent, and in the combination necessary to render it effective, the principal feature in which is a perpetually shifting valve. The body of the railway is a cast-iron cylinder, with horisontal rails diametrically opposite to each other, and forming ledges on the sides of the cylinder. The quantity of iron in a given length, and the consequent cost of the cylinders, are ascertainable to a fraction, and the cylinders may be cast in substance as light as possible, since any required degree of strength may be given to the construction by ribs or rings upon the lower semi-circumference at long intervals. The maintenance of fixed steam-engines, such as are to be used as prime movers, or to work the air-pumps, at stations along the line, is a matter of every-day experience; and the working of the blowing-machines, used in blasting iron, furnishes data for the working of air-pumps. The invention is not a recent novelty in the history of practical philosophy, but in all the attempts to render it practicable, the inventors found a difficulty in contriving such an aperture for the transit of the connecting rods or bars as should not destroy the vacuum within the tube by affording an opening for the rushing in of the external air in such places and in such a manner as to destroy the whole principle and power of the vacuum. In 1836, Mr. Pinkus thought he had effected this object; his method is said to have consisted of a pipe, 50 inches in diameter, with a slit or groove in the upper surface; the groove was to be closed by laying a rope in it, a piston was to move in the tube to which the rods or bars connecting it with the carriage were attached, wheels were attached to the bar or rod which lifted up the rope as the piston passed beneath it, and then came another wheel behind the bar or rod which forced down the rope into its former place, after the passage of the bar had taken place. The defect here is said to have been, that the rope could not be sufficiently forced down so as to make the aperture air-tight. The present patentees assert that they have contrived an effectual method of closing the aperture, so as to make it air-tight after the passage of the connecting rods, and thus render the application of the vacuum principle of practical utility to railroad conveyance. Their contrivance is this:—A pipe of nine inches is used for the transit of the piston; along the top of it is an aperture. To close the aperture there is a strip of leather, strengthened by plates of iron fixed like a lid, by being attached on one side to the pipe, while the other side falls into a groove, filled with a composition of oil and wax. Wheels are attached for opening and closing the valve, and, what is completely a new feature, a heated upper rod passes over the composition after the valve has been closed, melts the composition, soldering down the edge of the valve or lid to the groove, and sealing the tube. Thus it will be seen that the desideratum so long songht in vain, viz. the connecting the piston in the tube with the carriage above it in such a manner as to prevent the vacuum in the tube from being destroyed by the rush of external air, has been accomplished. It is proposed to divide the line of pneumatic railway into sections of from three to five miles in length, according to the acclivities to be worked, since the steeper acclivity will require a higher degree of rarefaction to be obtained within the same time. High-pressure steam-engines, of sufficient power, at each of the stations which limit the sections, will work air-pumps of sufficient capacity to produce the required degree of rarefaction to overcome the resistance of the load to be drawn within a given time; and the resistance being overcome, the train will, of course, proceed with a velocity equal to that with which the pistons of the air-pumps are worked. We have witnessed

THE TIME REQUIRED TO CONVERT WATER INTO STEAM, IS SIX TIMES GREATER THAN TO RAISE IT FROM THE FREEZING TO THE BOILING POINT.



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several experiments of the atmospheric railway on the line of railroad which runs from the Uxbridge road, near Shepherd's Bush, across Wormwood Scrubs to the line of the Great Western Railroad; but that it will ever compete with its noisy and terrific rival is more than we will venture to predict.

**RAIN**, in meteorology, vapour precipitated upon the earth in the form of drops of water. *Rain*, is the return to the earth, in condensed drops, of the aqueous vapours which are raised in the atmosphere by the sun and wind; the condensation being occasioned by a change in the general temperature, by a collision produced by contrary currents, or by a cloud passing into a cold stratum of air. The power of the air to hold water in solution does not increase in the same ratio with the increase of its temperature, but in a much higher ratio. Hence, when two masses of air, saturated with moisture, and of different temperatures, are mixed, the resulting compound is not capable of holding the whole water in solution, and a part is, in consequence, precipitated as *rain*. As the whole atmosphere, when saturated, is calculated not to hold in solution more water than would form a sheet five inches in depth, while the mean annual deposit of rain and dew is probably from 35 to 40 inches, it is obvious that the supply of atmospheric moisture must be renewed many times in the course of a year. [See AIR, FOG, &c.] The quantity of rain precipitated from the atmosphere depends upon a variety of circumstances,—on the previous dampness of the unmixed portions of the fluid,—their difference of heat,—the elevation of their mean temperature,—and the extent of the combination which takes place. When the deposition is slow, the very minute aqueous globules remain suspended, and form clouds; but if it be rapid and copious, those particles conglomerate, and produce, according to the temperature of the medium through which they descend, rain, mist, snow, or hail.

**RAIN'BOW**, in meteorology, an arch or semicircle exhibited in a rainy sky, and some similar situations, opposite to the sun, adorned with the prismatic colours, and formed by the refraction of the rays of light in spherical drops of water. The inner bow is produced by a refraction at the entrance of the drop, a reflection from its back, and a refraction at its exit, or by two refractions and one reflection. The outer bow by two refractions and two reflections within the drop; and, as much of the light is dispersed by the two reflections, so the outer bow is fainter than the inner bow. As all the drops in a shower are affected at the same time, so all the colours of light are visible anywhere to a spectator whose back is to the sun, in circles which are from 84 to 51 degrees and from 42 to 40 degrees from the *eye*; but in the two bows the colours are reversed. The two bows may be imitated by small glass globes of water placed within the above angles from the eye, or by throwing up water with an engine. A line passing from the sun through the eye of the spectator goes to the centre of the bow, so that the height of the bow is inversely as the height of the sun; and, if the sun is more than 42 or 54 degrees high, there can be no bow. Of course, as it is a mere optical effect, depending on the position of the eye, no two persons can see the same bow. An artificial rainbow may be produced in sunshine by scattering drops of water from a brush, by a garden engine, or otherwise, the water being thrown high in the air, and the spectator standing between it and the sun. The cut-glass ornaments of chandeliers produce colours on the same principle as rain-drops; as do also mist, and particles of frozen water between a luminous body and the eye, exhibiting the circular haloes often observed around the sun and moon.——*Lunar rainbow*. The moon sometimes also exhibits the phenomenon of an iris, by the refraction of her rays in drops of rain in the night time. Aristotle says he was the first that ever observed it; and adds, that is never visible but at the time of full moon. The lunar iris has all the colours of the solar, but much fainter.——*Marine rainbow*, a phenomenon sometimes observed in an agitated sea, when the wind carrying the tops of the waves aloft, and the sun's rays falling upon them, they are refracted.

**RAIN-GAUGE**, or **PLUVIAM'ETER**, an instrument to measure the quantity of rain which falls at any place in a given time. A very simple rain-gauge, and one, it is said, which will answer all practical purposes, consists of a copper funnel, the area of whose opening is exactly ten square inches: this funnel is fixed in a bottle, and the quantity of rain caught is ascertained by multiplying the weight in ounces by 173, which gives the depth in inches, and parts of an inch. In fixing these gauges, care must be taken that the rain may have free access to them; hence the tops of buildings are usually the best places. When the quantities of rain collected in them at different places are compared, the instruments ought to be fixed at the same heights above the ground at both places, because, at different heights, the quantities are always different, even at the same place.

**RAI'SINS**, grapes perfectly ripe, and dried either in an oven or by the heat of the sun; in this latter case they are richer and sweeter than when dried in an oven. The best raisins come from the south of Europe, as Spain, Portugal, and Calabria; there are also very fine ones brought from Smyrna, Damascus, and Egypt: their quality, however, in a great measure depends upon the method of their cure. The finest raisins are those *of the sun*, so called, being the plumpest bunches, which are left to ripen fully upon the vine after their stalks have been half cut through. They are imported in casks, barrels, boxes, and jars; and, exclusive of raisins, a considerable quantity of undried grapes is annually imported from Spain and Portugal, in jars, packed in sawdust. [See GRAPE.]



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RA'JAH, one of the ancient hereditary princes of India, before its conquest by the Moguls; some of whom are tributary to Europeans, and some are said to be independent.

RAKE, in a ship, the projection of the upper parts, at the height of the stem and stern, beyond the extremities of the keel. Also, a term signifying to fire in a direction with the length of anything: for example, to cannonade a ship on the stern or head, so that the balls range the whole length of the deck, is to *rake* her fore and aft.——The word *rake* is also applied to a loose, disorderly, vicious man.

RALLENTAN'DO, in music, an Italian term, implying that the tune of the passage over which it is placed is to be gradually decreased.

RAL'LUS, in ornithology, a genus of birds of the order *Grallæ*. They inhabit sedgy places: the principal species are—the crake or land-rail, the brook ousel or water-rail, the spotted gallinule, and the Philippine rail.

RAM, in zoology, the male of the sheep or ovine genus; in some parts of England called a *tup*.——*Rams*, in astronomy [See ARIES]. See also BATTERING RAM.

RAM'ADAN, a solemn season of fasting among the Mahometans, kept in the ninth month of the Arabic year. The Mahometans call this month holy, and believe that as long as it lasts the gates of paradise are open, and those of hell shut.

RAMEN'TUM, in botany, the small loose scales that are frequently found on the stems of vegetables.

RA'MEOUS, in botany, growing on or shooting from a branch.

RAMIFICA'TION, any small branch issuing from a large one, particularly the very minute branches issuing from the larger arteries.——In botany, the manner in which a tree produces its branches or boughs.

RA'MOUS, in botany having lateral divisions or being full of branches, as a stem or root.

RAM'PANT, in heraldry, an epithet for a lion, leopard, or other beast when it stands on its hinder legs, and rears up its fore feet in the posture of climbing, showing only its profile. It is different from *saliant*, in which the beast seems to be springing forward ——*Rampant gardant*, when the animal stands on its hinder legs, looking full-faced; *Rampant regardant*, when it so stands, but looks behind.

RAM'PART, in fortification, an elevation or mound of earth round a place, capable of resisting the cannon of an enemy; and formed into bastions, curtains, &c. Soldiers continually keep guard upon the ramparts, and pieces of artillery are planted there for the defence of the place.——*Rampart*, in civil architecture, is used for the space left between the wall of a city and the nearest houses.

RA'NA, in zoology, the name of the genus of which frogs and toads are the species

RANGE, in gunnery, the line which a shot describes from the mouth of a piece to the point where it lodges. When the muzzle is elevated to 45 degrees, it is called the utmost range.——Among mariners, a sufficient length of the cable drawn upon the deck before the anchor is cast loose from the bow.

RA'NGER, an officer whose duty it was to walk through the forest, and present all trespassers at the next forest court. The office of ranger is not of the same importance as formerly, but the situation is still filled, and his duties are of a similar kind.

RANI'NÆ VE'NÆ, in anatomy, the frog veins, certain veins which appear under the tongue.

RANK, the degree of elevation which one man holds in respect to another. This is particularly defined in regard to the nobility, as also in all offices of state, as well as in the officers of the army and navy.——*Rank*, in military tactics, the straight line which the soldiers of a battalion or squadron make as they stand side by side.——*Rank and file*, a name given to the men carrying firelocks, and standing in the ranks, in which are included the corporals.

RAN'SOM, money paid for redeeming a captive, or for obtaining the liberty of a prisoner of war.

RANTERS, a sect of dissenters, originating in Staffordshire, in 1807, and marked by the extravagance of their religious enthusiasm. They sprang from the Wesleyan methodists, from whom they separated, and by whom they are disowned. They hold camp meetings annually, and differ from the parent stock in many of their outward ceremonies, but they still assimilate to the original connection in their religious opinions.

RANUN'CULUS, a perennial much cultivated in gardens, bearing a flower of a globular shape. Also the systematic name of a genus of plants, of which the globe ranunculus, the crowfoot, and the spearwort are the principal species.

RANZ DE VACHE, in music, a favourite national air among the Swiss shepherds, which they play upon their bagpipes while tending their flocks and herds. It consists of a few simple intervals, is entirely adapted to the primitive life of these people and their instrument (the *Alpenhorn*, born of the Alps), and has an uncommon effect in the echoes of the mountains. This effect becoming intimately associated with the locality of Switzerland, explains the many anecdotes of the home-sickness caused by the sound of the *Ranz des Vaches*, when heard by Swiss in foreign countries.

RAPE, a division of a county; it sometimes means the same as a hundred, and at other times signifies a division consisting of several hundreds: thus Sussex is divided into six *rapes*, every one of which, besides its hundreds, has a castle, a river, and a forest belonging to it. Similar districts in other counties are called tithings, lathes, or wapentakes.——In botany, a biennial plant, of the genus *Brassica*. Rape is cultivated in many parts of England, partly on account of its seed, which is crushed for oil,



THE RANA PIPIENS, OR BULL FROG, IS THE LARGEST SPECIES OF THIS GENUS, THE BODY BEING SIX OR EIGHT INCHES LONG.

THOUGH RANK MAY BE TOO MUCH IDOLISED BY THE ARTFUL ARMIGERS OF POWER, IT MAY ALSO BE TOO RASHLY SLIGHTED.

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and partly for its leaves as food for sheep. ——*Rape-cake*, is the adhering masses of the husks of rape-seed, after the oil has been expressed: they are reduced to powder by a malt-mill or other machine; and are used either as a top-dressing for crops of different kinds, or are drilled along with turnip seed.

RA'PHANUS, in botany, a genus of plants, class 15 *Tetradynamia*; order 2 *Siliquosæ*. The species are the different varieties of the radish.

RAPHID'IA, in entomology, a genus of four-winged insects of the *Neuroptera* order. The head is of a horny substance, and depressed; the tail is armed with a slender horny weapon, not bifid at the extremity: it is about the size of the scorpion fly, and is common in meadows in July.

RAP'IDS, the part of a river where the velocity of the current is very considerable, owing to a gradual descent of the earth, but not sufficient to occasion such a fall of the water as is deemed a cascade or cataract.

RAREFAC'TION, in physics, the act or process of expanding or distending bodies; that is, brought to possess more room, or appear under a larger bulk without accession of any new matter. Rarefaction is opposed to *condensation*. Sir Isaac Newton shows, that the rarefaction of the air is so immense, that it is inconceivable on any other principle than that of a repelling force inherent in the air, whereby its particles mutually fly from one another. [See AIR, ATMOSPHERE, &c.]

RAS'PBERRY, in botany, the fruit of a bramble, or species of *rubus*. Several varieties are cultivated, differing in the size and colour of the fruit, either red, flesh-coloured, or yellow. A light soil is best suited to the culture of the raspberry, and an eastern or western exposure, slightly shaded. It is generally propagated by suckers.

RAT, in zoology, a well-known quadruped of the genus *Mus*, which infests houses, stores, and ships; an animal equally troublesome and destructive.

RATAFIA (pron. *ratafé*), a delicious liquor, made of the kernels of apricots, cherries, &c. steeped in brandy. In France, *ratifia* is the generic name of all *liqueurs* compounded with alcohol, sugar, and the odoriferous or flavouring principles of vegetables.

RATCH, in clock-work, a sort of wheel having twelve fangs, which serve to lift the detents every hour and thereby cause the clock to strike.

RATCH'ET, a small tooth at the bottom of the fusee or barrel of a watch, which stops it in winding up.

RATCH'IL, among miners, fragments of stone.

RATE, an assessment by the pound for public purposes; as, for the poor, the highways, church repairs, county expenses, &c. In the navy, the order or class of a ship, according to its magnitude or force.

RATH'OFFITE, in mineralogy, a kind of garnet found in Sweden. Its colour is a dingy brownish black, and it is accompanied with calcareous spar and small crystals of hornblend.

RATIO, the proportion or multiple of one thing in regard to another thing. Thus, the ratio of 2 to 4 is double, and the same as the ratio of 3 to 6, or 25 to 50. The composition of different ratios is effected by multiplying the antecedents together, and the consequents together.——*Prime* and *ultimate Ratio*, the relation which two variable quantities bear to each other when they are first supposed to be generated, and indefinitely small, hence called *prime*; or the relation of two variable quantities to each other at the instant of vanishing, or becoming indefinitely small, and hence called *ultimate* ratio.

RA'TION, the proportion or fixed allowance of provisions, drink, forage, &c. assigned to each soldier for his daily subsistence, and for the subsistence of horses. Seamen in the navy also have *rations* of certain articles.

RATIONA'LE, the account or solution of any phenomenon or hypothesis, explaining the principles on which it depends, and every other circumstance.

RA''TIONALISTS, a term used to denote certain latitudinarians in religion, who consider the supernatural events recorded in the Scriptures, as events happening in the ordinary course of nature, but described by the writers, without any real ground, as supernatural, and who consider the morality of the sacred writings as subject to the test of human reason.

RAT'LINES, in a ship, lines which make the ladder steps for going up the shrouds and ascending to the mast-head.

RATOON', a sprout from the root of the sugar-cane, which has been cut.

RATTAN', or RATAN', a long slender cane, the growth of a bush in parts of India (the *Calamus rotang* of Linnæus). The species have all perennial, long, round, jointed embranching stems, extremely tough and pliable, often ascending among the branches of trees, but without prickles or tendrils. It is the spontaneous product of all the forests of the Indian archipelago, but exists in great perfection in those of the islands of Borneo, Sumatra, and the Malayan peninsula. "The wood-cutter who is inclined to deal in this article," says Mr. Crawfurd, "proceeds into the forest without any other instrument than his *parang* or cleaver, and cuts as much as he is able to carry away. The mode of performing the operation is this: he makes a notch in the tree at the root of which the rattan is growing, and cutting the latter, strips off a small portion of the outer bark, and inserts the part that is peeled into the notch. The rattan now being pulled through as long as it continues of an equal size, is by this operation neatly and readily freed from its *epidermis*. When the wood-cutter has by this means obtained from 300 to 400 rattans, being as many as an individual can conveniently carry in their moist and undried state, he sits down and ties them up in bundles of 100, each

METALS SOLIDIFY AT HIGHER HEAT THAN WATER, WATER THAN OIL, AND OIL THAN SPIRITS AND MERCURY.

SOLIDS, WHICH ARE CAPABLE OF BECOMING FLUID, ARE THOSE ONLY WHICH FORM CRYSTALS WHEN RETURNING TO THE SOLID STATE.



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THE REMEDIES EMPLOYED AGAINST THE BITE OF THE RATTLESNAKE ARE SUCTION AND LIGATURES, CAUSTICS AND INTERNAL MEDICINES.

rattan being doubled before being thus tied up. After drying, they are fit for the market without further preparation." Immense quantities are consumed in India and Europe, but more particularly in China. For cane work they should be chosen long, of a bright pale yellow colour, well glazed, of a small size, and not brittle.

RAT'TLESNAKE, in zoology, a poisonous serpent of the genus *Crotalus*, from three to eight feet in length, with several horny cells at the tail, which, when moved, produce a loud rattling noise. The head is broad, triangular, and flat; the eyes brilliant, the mouth large, and the tongue forked. They inhabit the woods of North and South America. The sound of their rattle is said to be audible at the distance of twenty yards, and is thus useful in giving warning of the approach of the reptile. Its bite is attended with frightful consequences, as may be seen by the following instance, as narrated in Flint's Geography and History of the United States: "An emigrant family inadvertently fixed their cabin on the shelving declivity of a ledge, that proved a den of rattlesnakes. Warmed by the fire on the hearth of the cabin, the terrible reptiles entered in numbers, and, of course, in rage, by night, into the room where the whole family slept. As happens in those cases, some slept on the floor and some in beds. The reptiles spread in every part of the room, and mounted on every bed. Children were stung in the arms of their parents, and in each other's arms. Most of the family were bitten to death; and those who escaped, finding the whole cabin occupied by these horrid tenants, hissing and shaking their rattles, fled from the house by beating off the covering of the roof, and escaping in that direction." Blumenbach says, "we are assured by credible eye-witnesses that squirrels, small birds, &c. fall from the trees on which they stand, into the throat of the rattlesnake below; the circumstance is not, however, by any means confined to this genus, as it has been remarked in many other serpents of both the Old and the New World."

RATTLESNAKE ROOT, in botany, a plant or root of the genus *Polygala*, and another of the genus *Prenanthes*.

RAV'ELINS, in fortification, detached works composed of two faces, forming salient angles, and raised before the counterscarp.

RA'VEN, in ornithology, a large bird of the genus *Corvus*, of a black colour, with a bluish back: the head is small, depressed on the crown, and flatted on both sides; the eyes are large, bright, and piercing; and the beak is long and thick. It builds in high trees or rocks; is long lived, feeds on all sorts of carrion, and has an exquisite sense of smell.

RAY, in optics, a beam of light, propagated from a radiant point; said to be *direct* when it comes direct from the point; *reflected* if it first strike upon anybody, and is thence transmitted to the eye. The mixed solar beam contains, 1st. *calorific rays*, producing heat and expansion, but not vision and colour; 2nd. *colorific rays*, producing vision and colour, but not heat and expansion; 3rd. *chemical rays*, producing certain effects on the composition of bodies, but neither heat, expansion, vision, or colour; and 4th. a power producing magnetism, but whether a distinct or associated power is not determined.——In botany, the outer part or circumference of a compound radiate flower.——In ichthyology, a bony or cartilaginous ossicle in the fins of fishes, serving to support the membrane.

RAY'-FISH, in ichthyology, a genus of flat fish, with spiracles, of which there are nineteen species; the chief are the skate, thornback, the sting ray, and the torpedo, possessed of galvanic arrangements and powers.

RAYONNA'NT, in heraldry, an epithet for any ordinary that darts forth rays like the sun when it shines forth.

RE, in grammar, a prefix or inseparable particle at the beginning of words, to repeat or otherwise modify their meaning; as in *re*-action, *re*-export, &c.

REACH, in sea language, signifies the distance between any two points of land, lying nearly in a right line.

REACTION, in physics, the resistance made by all bodies to the action or impulse of others, that endeavour to change their state, whether of motion or rest.

REA'GENT, in chemistry, the name given to such bodies as serve to detect the component parts of others.

REAL, a small Spanish coin of the value of forty maravedis; but its value is different in different provinces.——*Real*, in law, pertaining to things permanent and immovable; as *real estate*, opposed to *personal* or *movable* property. *Real assets*, assets consisting in real estate, or lands and tenements descending to an heir, sufficient to answer the charges upon the estate created by the ancestor.

REAL'GAR, a metallic substance, the sulphuret of arsenic; which is either native, and dug out of the earth in China, or it is factitious, procured by boiling orpiment in subliming vessels.

RE'ALISM, in philosophy, is the opposite of *idealism*, and is that philosophical system which conceives external things to exist independently of our conceptions of them; but realism becomes materialism if it considers matter, or physical substance, as the only original cause of things, and the soul itself as a material substance.

RE'ALISTS, in philosophy, a sect of school philosophers formed in opposition to the Nominalists, who held that words, and not things, were the objects of dialectics.

REALM, a royal jurisdiction or extent of a king's dominions.

REAL PRES'ENCE, in the Romish church, the actual presence of the body and blood of Christ in the eucharist, or the conversion of the substance of the bread and wine into the real body and blood of Christ.

THE BANDED RATTLESNAKE IS A NATIVE OF MEXICO AND SOUTH AMERICA, AND IS GENERALLY FROM FOUR TO SIX FEET LONG.



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REAM, a certain quantity of paper. Twenty quires of twenty-four sheets each make a ream of writing paper; but the *printer's ream*, or *perfect* ream of printing paper, consists of 21½ quires, or 516 sheets. Two reams make what is termed a *bundle*.

REAR, a military term for behind.——*Rear-guard*, a body of men that marches in the rear of the main body to protect it.——*Rear-rank*, the last line of men that are drawn up two or more deep.——The *rear* is also a naval term applied to the squadron which is hindermost.

RE'ASON, a faculty of the human mind by which it distinguishes truth from falsehood, and good from evil, and which enables the possessor to deduce inferences from facts or from propositions.

RE'ASONING, or RATIOCINA'TION, the exercise of the faculty of the mind called *reason*; or an operation of the mind, deducing some unknown proposition from other previous ones that are evident and known. Every act of reasoning necessarily includes three distinct judgments; two, wherein the ideas whose relation we want to discover are severally compared with the middle idea, and a third wherein they are themselves connected, or disjoined, according to the result of that comparison. Now, as our judgments when put into words are called propositions, so the expressions of our reasonings are termed syllogisms. And hence it follows that as every act of reasoning implies three several judgments, so every syllogism must include three distinct propositions. Thus, beginning with first principles, we see that reasoning rises gradually from one judgment to another, and connects them in such a manner that at every stage it brings intuitive certainty along with it.——Locke says, *reason* sometimes is taken for true and clear principles; sometimes for clear and fair deductions; sometimes for the cause, particularly the final cause. And Swift adds, "reason itself is true and just, but the reason of every particular man is weak and wavering, perpetually swayed and turned by his interests, his passions, and his vices."

RE'BATE AND DIS'COUNT, a rule in arithmetic by which discounts upon ready money payments are calculated.

REB'EL, one who revolts from the government to which he owes allegiance, either by openly renouncing the authority of that government, or by taking arms and openly opposing it.

REBEL'LION, an open and avowed renunciation of the authority of the government to which one owes allegiance. *Rebellion* differs from *insurrection*; for insurrection may be a rising in opposition to a particular act or law, without a design to renounce wholly all subjection to the government. It may lead to, but is not necessarily in the first instance rebellion. Rebellion differs also from *mutiny*, that being an insurrection of soldiers or sailors against the authority of their officers.

RE'BUS, an enigmatical representation of some name, &c by using figures or pictures instead of words.——Camden tells us the rebus was in great esteem among our forefathers, and he was nobody who could not hammer out of his name an invention by this wit-craft, and picture it accordingly.——In heraldry a coat of arms which bears an allusion to the name of a person.

REBUTTER, in law, the defendant's answer to the plaintiff's sur-rejoinder, in a cause depending in the court of chancery, &c.

RECAPTION, in law, the taking a second distress of one formerly distrained for the same cause during the plea grounded upon the former distress. It is also the name of a writ which lies for the party thus distrained, to recover damages, &c.

RECEIPT', in commerce, an acquittance or discharge in writing for money received, or other valuable consideration.

RECEIVER, in pneumatics, a glass vessel for containing the thing on which an experiment in the air-pump is to be made.——In law, one who takes stolen goods from a thief, knowing them to be stolen, and incurs the guilt of partaking in the crime.

RECEPTACLE, in botany, the base by which the other parts of the fructification are connected. The receptacle of the fructification is common both to the flower and the fruit: the receptacle of the flower is the base to which the parts of the flower, exclusive of the germ, are fixed: the receptacle of the fruit is the base of the fruit only: the receptacle of the seeds is the base to which the seeds are fixed.

RE'CIPE, a medical prescription; or directions for preparing any mixture or compound.

RECIP'ROCAL, in general, something that is mutual, or which is returned equally on both sides, or that affects both parties alike.——*Reciprocal terms*, in logic, are those which have the same signification; and consequently are convertible and may be used for each other.——*Reciprocal figures*, in geometry, are those which have the antecedents and consequents of the same ratio in both figures.——*Reciprocal quantities*, in mathematics, are those which, multiplied together, produce unity.——*Reciprocal proportion*, in arithmetic, is when in four numbers the fourth is less than the second by so much as the third is less than the first, and the contrary.

RECITATIVE, a kind of musical pronunciation, in which the composer and the performer endeavour to imitate the inflections, accent, and emphasis of speech; such as that in which the several parts of the liturgy are rehearsed in cathedral churches, or that of actors on an operatic stage when they relate some event or reveal some design.

RECK'ONING, in navigation, an account of the ship's course and distance calculated from the log-board without the aid of celestial observation. This is called the *dead-reckoning*.

REC'LINATE, in botany, bent down-



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THE PROJECTILE FORCE OF STEAM IS SUPPOSED TO BE TEN TIMES GREATER THAN THAT OF GUNPOWDER, IN THE DISCHARGE OF A BALL.

SOME VOLATILE OILS ARE OBTAINED BY EXPRESSION FROM DISTINCT VESICLES IN THE RIND OF FRUITS, AS IN THE ORANGE AND LEMON.

A ROBIN LOSES NEARLY ALL THE RED COLOUR OF HIS BREAST IN THE SUMMER, AND DOES NOT RECOVER IT TILL HE HAS DONE MOULTING.

wards, so that the point of the leaf is lower than the base.

RECLINA'TION, in dialling, the number of degrees which a dial-plane leans backwards from an exactly upright or vertical plane; that is, from the zenith.

RECOGNI'ZANCE, in law, a bond or obligation acknowledged in some court, or before some judge, with condition to do some particular act, as to appear at the assizes, to keep the peace, &c. The person who enters into such bond is called the *recognizor*; the person to whom one is bound is the *recognizee*.

RECOIL', in gunnery, the retrograde motion made by any piece of fire-arms on being discharged. This term is particularly applicable to pieces of ordnance, which are always subject to a recoil, according to the sizes and the charges which they contain. To lessen the recoil of a gun, the platforms are generally made sloping towards the embrasures.

RECONNOI'TRE, in military language, means, to inform one's-self by ocular inspection of the situation of an enemy, or the nature of a piece of ground. It is one of the most important departments of the military art, and must precede every considerable movement. Reconnoitering not unfrequently brings on engagements, and considerable bodies of troops march out to cover the reconnoitering party, and to make prisoners if possible, in order to obtain information from them.

RECORD'ER, a person whom the mayor and other magistrates of a city or corporation associate with them for their better direction in matters of justice, and proceedings in law. He also speaks in their name, upon public occasions.

REC'ORDS, in law, the registers of official transactions, made by officers appointed for the purpose, or by the officer whose proceedings are directed by law to be recorded; as, the *records* of statutes or of judicial courts.——*Court of record*, is a court whose acts and judicial proceedings are enrolled on parchment or in books for a perpetual memorial; and their records are the highest evidence of facts.——*Trial by record*, is where a matter of record is pleaded, and the opposite party pleads there is no such record. In this case the trial is by inspection of the record itself, no other evidence being admissible.

RECOV'ERY, in law, the obtaining a right to something by a verdict and judgment of court from an opposing party in a suit; as, the *recovery* of debt, damages, and costs, by a plaintiff; the *recovery* of land in ejectments, &c.

REC'REMENT, in chemistry, some superfluous matter separated from some other that is useful; in which sense it is the same with *scoria*, *dross*, &c.

RECT'ANGLE, a figure whose sides are perpendicular to each other, or 90°.

RECTIFICA'TION, in chemistry, the process of refining by repeated distillation or sublimation, in order to render the substance purer.

REC'TOR, a term applied to the possessors of several official situations; as, 1. A clergyman who has the charge and cure of a parish, and the property of the tithes, &c.; 2. The chief elective officer in several universities; 3. The head master of large public schools in Scotland; 4. The governor in several convents; 5. The superior of a seminary or college of the Jesuits.

REC'TUM, in anatomy, the third and last of the large intestines.

REC'TUS, in anatomy, a name common to several pairs of muscles, so called on account of the straightness of their fibres.

REC'TUS IN CU'RIA, in law, one who stands at the bar, no person objecting any thing against him. Also, one who has reversed an outlawry, and can therefore partake of the benefit of the law.

RECUR'RENT VERSES, in poetry, verses that read the same backwards as they do forwards.

RECUR'VATE, in botany, bowed or curved downwards; as, a recurvate leaf. Or bent outwards; as, a recurvate prickle, corolla, &c.

RECURVIROSTER, in ornithology, a fowl whose beak or bill bends upwards.

RECURVIROSTRA, in ornithology, a genus of birds, order *Grallæ*. Birds of this tribe, called in English *Avocet*, inhabit the southern parts of Europe.

RECU'SANT, in English history, one who refuses to acknowledge the kingly supremacy in matters of religion; as, a popish *recusant*, who acknowledges only the supremacy of the pope.

RED, in physics, one of the simple or primary colours of natural bodies, or rather of the rays of light; but it has different shades or hues, as scarlet, crimson, vermillion, orange red, &c.——The Greeks called the Arabian gulf the *Erythræan* or *Red* sea, probably from Edom or Idumea; improperly applying the meaning of Edom, *red*, to the sea, which improper application has been continued to the present time.

RED'BREAST, in ornithology, a well-known bird, the *Motacilla rubecula* of Linnæus. The fame of this bird has arisen from the habit of its seeking the aid of man during the winter season, when it visits without dread the cottage of the peasant and the palace of the prince.

RED'IDIT SE, a law term, used in cases where a man renders himself in discharge of his bail.

REDEMP'TION, in law, the liberation of an estate from a mortgage; or the purchase of the right to re-enter upon it by paying the principal sum for which it was mortgaged, with interest and costs; also, the right of redeeming and re-entering.——In war and in commerce, the act of procuring the deliverance of persons or things from the possession and power of captors by the payment of an equivalent; as, the *redemption* of a ship and cargo.——In theology, the ransom or deliverance of sinners from the bondage of sin and the penalties of God's violated law by the atonement of Christ.

REDBREASTS ARE WERE HAUNT STABLES AND OUT-HOUSES IN THE WINTER, BECAUSE THEY CAN THERE FIND SPIDERS AND FLIES.



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REDOUBT', in fortification, a small square fort without any defence but in front; used in trenches, lines of circumvallation, contravallation, and approach, to defend passages, &c.

RED'START, in ornithology, a bird of the genus *Motacilla*.

REDUCTIO AD ABSURDUM, in logic, a mode of argument by which the truth of a proposition is proved by showing the absurdity of the contrary.

REDUCTION, in arithmetic, the rule for bringing numbers of different denominations into one denomination.——*Reduction*, in mineralogy, signifies the restoring an oxyde or calx to its primitive metal.——*Reduction*, in surgery, an operation whereby a dislocated bone is restored to its proper place.——*Reduction of Equations*, in algebra, the reducing them to the simplest state, or clearing them of all superfluous quantities, by separating the known from the unknown, till the unknown quantity alone is found on one side, and the known ones on the other.

REDUPLICATION, in logic, a kind of condition expressed in a proposition indicating or assigning the manner wherein the predicate is attributed to the subject.

REED, the common name of many aquatic plants. In general, it denotes a kind of long, hollow, knotted grass that grows in fens and watery places.——*Reed*, in music, the little movable tube at the mouth of certain wind instruments.——A well-known implement of the weaver, made of parallel slips of metal or reeds, called *dents*.

REEFING, a sea term for the rolling or taking up a sail in a great gale of wind.——*Reef-tackle*, a tackle upon deck, communicating with its pendant, and passing through a block at the top-mast head, and through a hole in the top-sail yard-arm, is attached to a cringle below the lowest reef. It is used to pull the skirts of the top-sails close to the extremities of the yards to lighten the labour of reefing.

REFECTION, among certain ecclesiastics, a spare meal or repast just sufficing for the support of life: hence the hall in convents, and other communities, where the monks, nuns, &c. take their refections or meals in common, is called the *refectory*.

REFEREE', one to whose decision a thing is referred; particularly, a person appointed by a court to hear, examine, and decide a cause between parties, pending before the court, and make report thereon.

REFERENCE, in law, the act of referring a matter in dispute to the decision of an arbitrator. Also, in the court of chancery, the referring a matter to a master.——*Reference*, in printing, a mark in the text of a work referring to a similar one in the side or at the bottom of the page.

REFI'NING, in general, is the art or practice of purifying a thing; including not only the assaying or refining of metals, but likewise the clarification of liquors.

REFLECTION, the review or reconsideration of past thoughts, opinions, or decisions of the mind, or of past events.——*Reflection of the rays of light*, in optics, is their return after approaching so near the surfaces of bodies as to be thereby repelled, or driven backwards. The great law of reflection is, that the angle of reflection is always equal to the angle of incidence.

RE'FLEX, in painting, is a term used to denote those places in a picture which are supposed to be illuminated by a light reflected from some other body, represented in the same piece.——*Reflex vision*, that performed by means of reflected rays, as from mirrors.

REFORM (PARLIAMENTARY), a change to some considerable extent in the representative part of the English constitution, by an extension of the elective franchise to modern large towns, such as Manchester, Birmingham, &c. which heretofore sent no members to parliament and by taking away the franchise from places which had long since become insignificant. [See PARLIAMENT, &c.]

REFORMA'TION, the term applied by Protestants, universally, to denote the change from the Roman Catholic to the Protestant religion, which was first set on foot in Germany by Luther, A.D. 1517, but had been begun in England by Wickliffe, and was afterwards completed by Henry VIII. who assumed the title of Head of the Church. Of all the errors, frauds, and superstitions of the church of Rome, the one which proved most injurious to religion and morals, and that which was most deplored by enlightened and conscientious men, was the facility with which riches were allowed to purchase salvation! Wealth was invested in monasteries, shrines, and chantries; and few persons who had any property at their own disposal went out of the world without bequeathing some of it to the clergy for saying masses, in number proportioned to the amount of the bequest, for the benefit of their souls. Thus were men taught to put their trust in riches; their wealth, being thus invested, became available to them beyond the grave; and in whatever sins they indulged, provided they went through the proper forms and obtained a discharge, they might purchase a free passage through purgatory, or, at least, an abbreviation of the term and a mitigation of its torments while they lasted. But purgatory was not the only invisible world over which the authority of the church extended; for to the pope, as to the representative of St. Peter, it was pretended that the keys of heaven and hell were given; a portion of this power was delegated to every priest, and they inculcated that the soul which departed without confession and absolution, bore with it the weight of its deadly sins to sink it to perdition. To this let us add, that the arrogance of the priests had exasperated the princes; the encroachments of the mendicant friars did injury to the secular ecclesiastics; and a thousand innocent victims of the inquisition called for vengeance. Other causes also conspired to bring on the day of religious freedom: the



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means of information were vastly increased by the art of printing; materials for thinking were laid before the people by instructive works in the vulgar tongues; the number of learned men increased; and the intelligence for which the Reformation was to open a way began to act generally and powerfully. The centre of Europe, together with the north, which had long submitted with reluctance to Rome, was ready to countenance the boldest measures for shaking off the priestly yoke, of which the best and most reflecting men had become impatient. But no one anticipated the quarter whence the first blow would be struck. Leo X. was created pope in 1513; and, little affected by the universal desire for reformation in the church, he seemed placed at its head merely to employ its revenues in the gratification of his princely tastes. Albert, elector of Mentz and archbishop of Magdeburg, a prince of a similar character, received from Leo, in 1516, permission to sell *indulgences* within his own jurisdiction, on condition of sharing the profits with the pope. In this traffic, Albert employed, among others, John Tetzel, a Dominican monk of Leipsic, who went about from place to place, carrying on his trade with the most unblushing impudence, and extolling his certificates above the papal bulls (which required repentance), as unconditional promises of the forgiveness of sins in time and eternity. Luther, an Augustine monk of Erfurt,—a man of powerful mind, and distinguished more for his deep piety and strong love of truth, than for deep erudition,—set his face against this abuse, first in his sermons, and afterwards in ninety-five theses, or questions, which he affixed to the door of the church, Oct. 31, 1517. This led to several public disputations, in which he had such a decided advantage over his antagonists, that this man, who was hardly known before, became the public champion of all enlightened men who lamented the degeneracy of the church of Christ. The respect for the Roman court, which was perceptible in his earlier writings, he now discarded, as the injustice of the papal pretensions had become clear to him. The most complete success attended his endeavours; and wherever the reformed religion found its way, the worship of God recovered that simplicity, and warmth, and sincerity, which had characterized it among the first Christians. Religion was no longer a mere subject of the imagination, but appealed to the reason and feelings of men, and invited close investigation. The reformation also had an important influence on morals. While the reformers abolished the principle of blind obedience to the pope and other ecclesiastical dignitaries, denied the merit of penances, fasts, and alms, and rejected the possibility of acts of supererogation, by which saints had enriched the treasury of the church, they again awakened the smothered moral feelings of men, and introduced that more elevated morality which requires holiness of heart and purity of conduct.

REFRACTION, in optics, the deviation of a ray of light from that right line in which it would have continued if not prevented by the thickness of the medium through which it passes. The great law of refraction, which holds in all bodies and all mediums, is, that a body passing obliquely out of one medium into another wherein it meets with less resistance, is refracted or turned towards the perpendicular; and, on the contrary, in passing out of one medium into another wherein the resistance is greater, it is refracted or turned from the perpendicular. We read of many curious appearances occasioned by atmospherical refraction. The following instance is recorded in the Philosophical Transactions, by William Latham, esq., who, when living at Hastings, was one day surprised by seeing a vast number of people hurrying down to the sea-side. Upon inquiring the reason, he was informed that the coast of France was plainly to be distinguished with the naked eye; and he clearly perceived, without the aid of a telescope, the cliffs on the opposite coast, which are at least between forty and fifty miles distant, and not at other times to be discovered with the best glasses. They appeared to be only a few miles off, and extended some leagues along the coast. Sailors and fishermen along the shore pointed out and named the different places they had been accustomed to visit,—as the Bay, the Old Head, or Man, the Windmill, St. Vallery, and other places on the coast of Picardy. All these places appeared to him as if they were sailing at a small distance into the harbour. From the eastern cliff or hill, Mr. Latham saw at once Dungeness, Dover cliffs, and the French coast all the way from Calais and Boulogne on to St. Vallery, and, as some of the fishermen affirmed, as far as Dieppe. The day was extremely hot, without a breath of wind, and objects at some distance appeared greatly magnified.——*Refraction of the stars*, an inflection of the rays of those luminaries in passing through our atmosphere, by which the apparent altitudes of the heavenly bodies are increased.

REFUGEE', in political history, a term applied to the French protestants, who, on the revocation of the edict of Nantes, fled from the persecution of France. The same term was also applied to the French priests and other royalists who sought an asylum in this country at the commencement of the revolution.

REGA'LIA, in law, the rights and prerogatives of the sovereign power; also the ensigns of royalty, the crown, sceptre, &c. worn by our kings and queens at their coronation.——*Regalia of the church*, are the rights and privileges which cathedrals, &c. enjoy by royal grants. This term is particularly used for such lands and hereditaments as have been given by different sovereigns to the church.

REGAR'DANT, in heraldry, looking behind; used for a lion, &c. with the face looking towards the back in an attitude of vigilance.





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REGARD'ER, an ancient officer of the king's forest, whose business is to inquire into all offences and defaults committed within the forest, and to observe whether the other officers execute their respective duties.

REGATTA, a name given to our yacht and boat races on different parts of the coast, or on large rivers. The word is adopted from the *regatta* in Venice, where boats, containing one person only, contest for prizes on the canals that intersect that city. It is generally a very gay and attractive spectacle, from the number of spectators present in ornamented gondolas.

REGENERATION, in theology, the state of being born again by a spiritual birth; or that change of heart and life experienced by a person who forsakes a course of vice, and sincerely embraces a life of virtue and piety.

RE'GENT, one who governs a kingdom during the minority or absence of the rightful monarch.——In English universities, a master of arts under five years' standing, and a doctor under two.——A member of a board or corporate body in the state of New York, who have power to grant acts of incorporation for colleges, and to visit and inspect all colleges, academies, and schools in the state.

RE'GIMEN, the regulation of diet, or, in a more general sense, of all the nonnaturals, with a view to preserve or restore health.——In grammar, that part of syntax, or construction, which regulates the dependency of words, and the alterations which one occasions or requires in another in connection with it.

RE'GIMENT, in military affairs, a body of troops, either horse, foot, or artillery; the infantry consisting of one or more battalions, and commanded by a colonel or lieutenant-colonel. —— *Regimentals*, the uniform clothing of the army.

RE'GION, in geography, a large extent of land, inhabited by many people of the same nation, and inclosed within certain limits or bounds.——*Region*, in physiology, is used for a division of our atmosphere, which is divided into the upper, middle, and lower regions. The *upper region* commences from the tops of the mountains, and reaches to the utmost limits of the atmosphere. In this region reigns a perpetual, equable calmness, clearness, and serenity. The *middle region* is that in which the clouds and meteors are formed, extending from the extremity of the lowest to the tops of the highest mountains. The *lowest region* is that in which we breathe, which is bounded by the reflection of the sun's rays.——The *ethereal* or *celestial region*, is that vast extent of the universe that contains all the heavenly bodies.——*Elementary region*, a sphere bounded by the orb of the moon, comprehending the atmosphere of the earth.——*Planetary region*, that part of the heavens where the planets perform their revolutions. [See ASTRONOMY, ATMOSPHERE, and AIR.]

RE'GISTER, an official account of the proceedings of a public body, or a book in which are entered and recorded memoirs, acts, and minutes, to be had recourse to occasionally, as well as for preserving and conveying to future times an exact knowledge of transactions.——*Register*, in printing, such an accurate arrangement of the lines and pages, that those printed on one side of the sheet shall fall exactly on those of the other.——Among letter-founders, the inner part of the mould in which the printing types are cast.——*Register*, in chemistry and the arts, an aperture with a lid, stopper, or sliding plate, in a furnace, stove, &c. for regulating the admission of air, and the heat of the fire.——*Parish Register*, a book in which are recorded the baptisms of children, and the marriages and burials in a parish.——*Register ship*, a ship which obtains permission to trade to the Spanish West Indies, and is registered before sailing.

RE'GIUS PROFES'SOR, in literature, a title given to each of the five readers or lecturers in the university of Oxford, so called from king Henry VIII., by whom these professorships were founded.

REG'LET, or RIG'LET, in architecture, a flat narrow moulding, used chiefly in pannels and compartments, to separate the parts or members from each other, and to form knots, frets, and other ornaments. ——In printing, a ledge or thin slip of wood exactly planed, used to separate lines and make the work more open.

REG'NUM ECCLESIAS'TICUM, in law, the absolute and independent power which was possessed and exercised by the clergy previous to the reformation, in all spiritual matters; in distinction from the *regnum seculare*.

REGRA'TER, one who buys and resells in the same fair or market; a *forestaller* being one who buys on the road to the market.

REG'ULA, in archæology, the book of rules or orders of a monastery.

REGULAR BODIES, in geometry, those which are comprehended by like equal and regular plane figures, whose solid angles are all equal.——*Regular curves*, such as are always curved after the same geometrical manner.

REG'ULARS, in military affairs, that part of the army which is entirely at the disposal of government.——In ecclesiastical history, *regulars* are such as live under some rule of obedience, and lead a monastic life.

REG'ULATOR, the small spring belonging to the balance of a watch, and which serves to adjust its motions by retarding or accelerating them.

REG'ULUS, a term formerly employed by chemists, but rarely used now, to denote metallic matters when separated from others by fusion. *Regulus* is a diminutive of *rex*, a king; and was so called because the alchemist expected to find gold, the king of metals, collected at the bottom of the crucible. To procure the regulus or mercurial parts of metals, flux powders were formerly used, as nitre, tartar, &c., to purge the sul-



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WHEN BELGIUM SEPARATED HERSELF FROM THE KINGDOM OF THE NETHERLANDS, PERSONS WERE APPOINTED TO GOVERN THE KINGDOM AS REGENTS.

WHEN POLAND ROSE AGAINST RUSSIA, PERSONS WERE PLACED AT THE HEAD OF AFFAIRS WITH THE TITLE OF REGENTS.

phureous part adhering to the metal, by attracting it to themselves, and absorbing it.——*Regulus*, in astronomy, a star of the first magnitude, in the constellation Leo, called also from its situation, *cor leonis*, or the lion's heart.——*Regulus*, in ornithology, the name of several birds of the *motacilla* kind. The created regulus is about the size of the common wren; the head, neck, and back are of a mixed green and grey colour; its breast and belly of a pale gray, and its wings variegated with black and yellow. The head of the male is ornamented with an orange-coloured crest or crown; whence the names *regulus*, *tyrannus*, &c.

REIN'-DEER, in zoology, the *Cervus tarandus* of Linnæus, an animal of the deer kind that inhabits the northern regions, chiefly in Norway, Lapland, and Greenland; it is five feet in height, horns long and slender, besides a pair of brow antlers. This animal is used by the natives in drawing their sleds and for other purposes; and it is allowed that it will draw a sled on the snow more than a hundred miles in a day.

REJOIN'DER, in law, the defendant's answer to the plaintiff's reply.

RELA'TION, in logic, one of the ten predicaments or accidents belonging to substance.——*Relation, inharmonical*, in music, a term to express that some harsh and displeasing discord is produced in comparing the present note with that of another part.

REL'ATIVE, in general, a term signifying not absolute, but considered as belonging to or respecting something else.——*Relative*, in grammar, a word which relates to or represents another word, called its antecedent, or to a sentence or member of a sentence, or to a series of sentences, which constitutes its antecedent.—*Relative terms*, in logic, terms which imply relation, as guardian and ward; husband and wife; master and servant.

RELAY', a supply of horses ready on the road to relieve others, in order that a traveller may proceed without delay. In hunting, *relay* signifies fresh sets of dogs, or horses, or both, placed in readiness, in case the game comes that way, to be cast off, or to mount the hunters in lieu of the former.

RELE'ASE, in law, is a discharge or conveyance of a person's right in lands or tenements, to another who has some former estate in possession. The words generally used therein are, "remised, released, and for ever quit-claimed."

REL'ICS, in the Romish church, the remains or supposed remains of saints, martyrs, or other holy persons, or something appertaining or belonging to them, devoutly preserved in honour of their memory. At first these objects were only held in high esteem; but on the return of the crusaders from the East, relics greatly multiplied, and eventually superstition ascribed to them miraculous powers, which soon degenerated into a system of fraud of the grossest kind.

RELIE'F, in law, a fine formerly paid to the king by every one who came to an inheritance of land held *in capite*, or military service.——*Relief in chancery*, an order sued out for the dissolving of contracts, &c. on the ground that they are unreasonable or prejudicial.——*To relieve guard*, in military tactics, to bring fresh men for the relief of those that were on guard before.

RELIE'VO, or RELIEF, in sculpture, the prominence of a figure that rises from the ground or plane on which it is formed. There are three degrees of relievo; *alto, basso*, and *demi*. The alto-relievo, also called *haut-relief*, or high-relief, is that in which the figure projects according to the natural proportions. Basso-relievo, *bas-relief*, or low-relief, is that usual on medals; and demi-relievo, *demi-relief*, or half-relief, is where one half of the figure rises from the plane.

RELI'GION, that worship and homage which is due to God, considered as our creator, preserver, and most bountiful benefactor. It is divided into natural and revealed. By *natural religion* is meant, that knowledge, veneration, and love of God, and the practice of those duties to him, our fellow-creatures, and ourselves, which are discoverable from the right exercise of our rational faculties, from considering the nature and perfections of God, and our relation to him and to one another. By *revealed religion* is meant, natural religion explained, enforced, and enlarged, from the express declarations of God himself, from the mouths or pens of his prophets, &c.—Religion, in a more contracted sense, is used for any system of faith and worship; and even for the various sects into which each religion is divided. Religion is different from *theology*, inasmuch as the latter is speculative and the former practical. Religion is a system of duties; theology a system of opinions. Theology inquires into the nature of the power or powers to whom all visible things are in subjection; religion is the sentiment which springs from that inquiry. The slightest knowledge of history is sufficient to inform us that religion has ever had a powerful influence in moulding the sentiments and manners of men. In one region or age it has been favourable to civilization and refinement; in another it has been so directed as to fetter genius or warp the human mind. That, however, depends on the purity of the doctrine and the liberality of its teachers.

RELIGIOUS HOUSES, different asyla or habitations for priests, nuns, and poor, still existing in Catholic countries, and before the Reformation abounding in England. They consisted of abbeys, monasteries, priories, hospitals, friaries, and nunneries, supported by lands and bequests left them by pious persons, which became enormous. Nearly the whole (above 3000) were dissolved, and their wealth seized by Henry the Eighth; the monks, nuns, and officers being allowed pensions.

RE'LIQUÆ, in Roman antiquity, the ashes and bones of the dead, remaining after burning their bodies; which were gathered up, put into urns, and afterwards deposited in tombs.

REMAIN'DER, in division, the nume-

RELICS ARE FORBIDDEN TO BE USED OR BROUGHT INTO ENGLAND BY LAW, AND HOUSES MAY BE SEARCHED FOR THEM.

THE VARIOUS RELIGIONS IN THE WORLD MAY BE REDUCED TO FOUR GREAT CLASSES,—THE JEWISH, CHRISTIAN, PAGAN, AND MAHOMETAN.



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rator of a fraction of which the divisor is the denominator; as when we divide by 4, and 3 remains, it signifies that the divisor goes in the dividend $\frac{3}{4}$ times more than the whole numbers in the quotient.——*Remainder*, in law, an estate in lands, tenements, or rents, not to be enjoyed till after a term of years or another person's decease. There is this difference between a *remainder* and a *reversion*; in case of a reversion, the estate granted, after the limited time, reverts to the grantor or his heirs; but by a remainder it goes to some third person or a stranger.

REMIS'SION, in medicine, the abatement of a disorder which does not entirely leave the patient; in distinction from *intermission*, when it goes entirely away for a time.

REMINIS'CENCE, that faculty of the mind by which ideas formerly received into it, but forgotten, are recalled or revived in the memory.

REMON'STRANCE, a strong representation of reasons against a measure, either public or private; and when addressed to a public body, a prince, or magistrate, it may be accompanied with a petition or supplication for the removal or prevention of some evil or inconvenience.

REMON'STRANTS, in ecclesiastical history, the appellation given to the Arminians who remonstrated against the decisions of the synod of Dort, in 1618.

REMO'RA, in ichthyology, the sucking-fish, a species of *Echeneis*, which is said to attach itself to the bottom or side of a ship, and retard its motion.——In surgery, an instrument for setting a broken bone.

REN'ITENCE, or REN'ITENCY, in physics, the effort of matter to resume the place or form from which it has been driven by the impulse of other matter; the effect of elasticity, or the resistance of a body to pressure.

REN'NET, or RUN'NET, the concreted milk found in the stomach of a calf. The same name is given to a liquor prepared by steeping the inner membrane of a calf's stomach in water, and to the membrane itself. This is used for coagulating milk, or converting it into curd in the making of cheese.

REN'T, in law, a sum of money issuing yearly from lands and tenements; a compensation or return, in the nature of an acknowledgment, for the possession of a corporeal inheritance.——*Rack-rent*, is a rent of the full value of the tenement, or near it.——A *fee-farm rent*, is a rent charge issuing out of an estate in fee, of at least one-fourth of the value of the lands at the time of its reservation.

RENT'AL, a schedule in which the rents of manors are set down. It contains the lands let to each tenant, with their names, and the several rents arising.

RENT CHARGE, in law, a charge of rent upon land, with a clause of distress in case of non-payment.

RENVERS'E, in heraldry, set with the head downwards, or contrary to the natural posture.

REPAND', in botany, an epithet for a leaf, the rim of which is terminated by angles having sinuses between them, inscribed in the segment of a circle; or which has a bending or waved margin without any angles.

REPEAT', in music, a character showing that what was last played or sung must be repeated.

REPEAT'ER, a kind of watch, which, by means of a spring, repeats or strikes the hour.

REPEL'LENTS, medicines which drive morbid humours from the part where they have settled; or which prevent such an afflux of fluid to a part, as would raise it to a tumour.

REPENT'ANCE, in a religious sense, sorrow or deep contrition for sin, as an offence and dishonour to God, and a violation of his holy law; but to render it acceptable, it must be followed by amendment of life. Legal repentance, or such as is excited by the terrors of legal penalties, may exist without an amendment of life.

REP'ERTORY, a place in which things are disposed in an orderly manner, so that they can be easily found, as the index of a book, a common-place book, &c.

REPLEVIN, in law, a remedy granted on a distress, by which a person, whose effects are distrained, has them restored to him again, on his giving security to the sheriff that he will pursue his action against the party distraining, and return the goods or cattle if the taking them shall be adjudged lawful.

REPLICA'TION, in logic, the assuming or using the same term twice in the same proposition.

REPRESEN'TATIVE, one who lawfully represents another for the performance of any duty, according to the wishes of the other and to his own honest judgment. A member of the house of commons is the *representative* of his constituents and of the nation. In matters concerning his constituents only, he is supposed to be bound by their instructions; but in the enacting of laws for the nation, he is supposed not to be bound by their instructions, as he acts for the whole nation. Any other construction of his duty would be derogatory to him as a free and independent member of the senate.

REPRIE'VE, in law, a warrant for suspending the execution of a malefactor.

REPRODUC'TION, a term used for the production of perfect trees and animals from pieces cut off them, as branches planted in the ground, and parts of polype and certain water-worms. These, and the reproduction of several parts of lobsters and crabs, are among the greatest curiosities in natural history.

REPTILES, in zoology, creeping animals, or such as rest on one part of the body while they advance with the other. Most reptiles have feet, but very small ones, and legs remarkably short in proportion to the bulk of their bodies. They belong to the first order of the class *Amphi-*

IN TEMPERATE CLIMATES THE GENERALITY OF REPTILES PASS THE WINTER IN AN ALMOST CONSTANT STATE OF TORPIDITY.

ALTHOUGH REPTILES ARE ENDOWED WITH FIVE SENSES, THEY DO NOT POSSESS ANY OF THEM IN GREAT PERFECTION.



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VENTILATORS, BY CARRYING OFF THE HEAT, SMOKE, AND FOUL AIR, GREATLY CONTRACT THE INSALUBRITY OF CROWDED ASSEMBLIES.

*bia* in the Linnæan system, and include the tortoise, turtle, toad, frog, lizard, crocodile, alligator, chameleon, salamander, &c.

REPUB'LIC, in politics, a state in which the exercise of the sovereign power is lodged in representatives elected by the people. In modern usage, it differs from a democracy or democratic state, in which the people exercise the powers of sovereignty in person: yet the democracies of Greece are often called *republics*.——*Republic of letters*, the collective body of learned men.

REPULLULATION, a term in botany for the act of budding again.

REPUL'SION, in physics, that property in bodies by which, if they are placed just beyond the sphere of each other's attraction, they mutually fly from each other. By repulsion a fine needle will lie on water without apparently touching it; and drops of water will roll over a cabbage-leaf without leaving the least trace behind.

REQUE'STS, COURT OF, in law, a convenient court for the recovery of small debts, held by commissioners duly qualified, who try causes by the oath of parties and of other witnesses.

RE'QUIEM, in music, a prayer in the Romish church, which begins with *Requiem æternam dona eis domine;* whence, "to sing a *requiem*," is to sing a mass for the rest of the souls of deceased persons.

RE'SCRIPT, the answer of an emperor, when consulted by particular persons on some difficult question. This answer serves as a decision of the question, and is therefore equivalent to an edict or decree.

RES'CUE, in law, the forcible retaking of a lawful distress from the distrainor, or from the custody of the law: also, the forcible liberation of a defendant from the custody of the officer.

RESERVA'TION, in law, a clause or part of an instrument by which something is reserved, not conceded or granted.——*Mental reservation*, is the withholding of expression or disclosure of something that affects a proposition or statement, and which if disclosed would materially vary its import.

RESER'VE, or *Corps de reserve*, in military affairs, the third or last line of an army drawn up for battle; so called because they are reserved to sustain the rest, as occasion requires, and not to engage but in case of necessity.

RES'ERVOIR, a place where water is collected and reserved, in order to be conveyed to distant places through pipes, or to supply a fountain, &c.

RESIDEN'TIARY, a canon or other ecclesiastic installed into the privileges and profits of residence.

RESID'UAL FIGURE, in geometry, the figure remaining after subtracting a lesser from a greater.

RESID'UAL ROOT, in algebra, a root composed of two parts or members, connected together by the sign —.

RESID'UARY LEGATEE', in law, the legatee to whom the residue of a personal estate is given by will, after deducting all the debts and specific legacies.

RESIL'IENCE, the act of leaping or springing back, or the act of rebounding; as, the *resilience* of a ball or of sound.

RES'IN, or ROS'IN, a solid inflammable substance exuding from trees; as the common resin, or turpentine, from the pine; mastich from the pistacea; sandarach from the thuya, &c. Pure resins are soluble in alcohol, but the impure resins are not soluble. Resins differ from *gums*, which are vegetable mucilage; and they are less sweet and odorous than balsams. Almost all resins are translucid, not often colourless, but generally brown. When heated, they melt more or less easily into a thick viscid liquid, and concrete, on cooling, into a smooth shining mass.——*Resinous electricity*, is that electricity which is excited by rubbing bodies of the resinous kind, and which is generally *negative*. Hence the term *resino-electric*.

RESISTANCE, or RESISTING FORCE, any power which acts in an opposite direction to another, or which prevents the effect of another power; as the *resistance* of a ball which receives the force of another; the *resistance* of wood to a cutting instrument; that of air to the motion of a cannon-ball, or of water to the motion of a ship.——We use the term *resisting medium*, when we speak of a substance which opposes the passage of a body through it.

RESOLU'TION, the operation or process of separating the parts which compose a complex idea or a mixed body.——The determination or decision of a legislative body; or a formal proposition offered for legislative determination.——In mathematics, a method by which the truth or falsehood of a proposition is discovered.——In chemistry, the reducing a body to its component parts.——In surgery, the dispersing of tumours.——*Resolution of forces*, in mechanics, the dividing any force or motion into several others in other directions, but which taken together shall have the same effect as the single one.

RESPIRATION, a most important function of the animal body, consisting in the alternate inhalation and exhalation of air, by which the lungs and chest are alternately dilated and contracted; by the effect of which life is supported.

RESPOND'ENT, in law, one that answers in a suit, particularly a chancery suit.——In the schools, one who maintains a thesis in reply, and whose province is to refute objections or overthrow arguments.

RESPON'SE, an answer; but more particularly used to denote the answer of the congregation to the priest, in the litany and other parts of divine service.——In the Romish church, a kind of anthem sung after the morning lesson.

RESTO'RATIVE, a medicine efficacious in restoring the strength and vigour of the body, or in recruiting the vital powers.

RESTORATION, renewal; revival; re-establishment. In England, the return of king Charles II. in 1660, is, by way of emi-

IN PROPORTION AS 1-8TH OXYGEN IS DIMINISHED BY AN ASSEMBLY OF MANY PERSONS, SO THE AIR BECOMES LESS FIT FOR RESPIRATION.



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nence, called *the Restoration;* and the 29th of May is kept as an anniversary festival, in commemoration of the re-establishment of monarchy.

RESULTANT, in mechanics, a force which is the combined effect of two or more forces, acting in different directions.

RESU'PINATE, in botany, reversed. A *resupinate leaf* is when the upper surface becomes the lower, or the contrary. A *resupinate corolla* is when the upper lip faces the ground, and the lower lip the sky.

RESURRECTION, a term implying either the return to life of Jesus Christ, or the revival of the dead at the day of judgment as we are taught to believe by the scriptures.

RESUSCITATION, the restoring of persons apparently dead to life; chiefly confined to the restoring of those who appear to be dead from being immersed in water or from hanging. In the efforts made by a drowning person, or animal, to draw in air, the water rushes into the mouth and throat, which parts immediately contract in such a manner as to shut up the passage into the lungs. The contracted state continues as long as the muscles retain the principle of life, upon which the power of muscular contraction depends; when that is gone they become relaxed, and the water enters the windpipe, and completely fills it. As soon as the body is taken out of the water, it should be stripped of any clothes it may have on, and be immediately well dried. It should then be wrapped in dry, warm blankets, or in the spare clothes taken from some of the by-standers, and be removed as quickly as possible to the nearest house, in which a fire is ready or can be made. Whatever mode of conveyance be adopted, particular care should be taken that the head be neither suffered to hang backwards, nor to bend down with the chin upon the breast. When arrived at the house, the body should be laid on a mattress, or a double blanket, spread upon a low table, or upon a door supported by stools, the head and chest being elevated by pillows.—It is presumed that by this time medical assistance may have been procured, and that the proper means, which vary according to the case, will be used.

RETICENCE, or RETICENCY, in rhetoric, a figure by which a person really speaks of a thing, while he makes a show as if he would say nothing on the subject.

RETICULATE, in botany, having distinct veins crossing like net-work; as, a *reticulate* petal or corolla.

RETIFORM, composed of crossing lines and interstices, like a net; as, the *retiform* coat of the eye.

RETAINER, in law, a servant who does not reside in the house of his master, but only attends upon special occasions.

RETAINING FEE, a fee given to a counsel, in order to engage him and prevent his pleading on the contrary side.

RETE MUCO'SUM, in anatomy, a mucous membrane between the epidermis and the cutis, which is one part of the integument of the skin, and the principal seat of colour in the human species.

RETINA, in anatomy, the expansion of the optic nerve on the internal surface of the eye, where the sense of vision is first received, and of which it is the true organ.

RETINITE, in mineralogy, stone of fusible pitch, of a resinous appearance and of various colours, rarely homogeneous, and often containing crystals of feldspar and scales of mica. It is called also *retinasphalt.*

RETIRA'DE, in fortification, a kind of retrenchment in the body of a bastion or other work, which is to be disputed inch by inch, after the defences are dismantled.

RETORT', a chemical vessel used in distillation. Any substance intended to be acted upon by great heat being put into it, is exposed in it over a lamp, or other fire, and on being volatilised, passes through the end into any other vessel adapted to receive it.

RETRAXIT, in law, the withdrawing or open renunciation of a suit in court, by which the plaintiff loses his action. A *retraxit* is a bar to any future action, which a *nonsuit* is not.

RETRENCH'MENT, in the art of war, any kind of work raised to cover a post and fortify it against the enemy, such as fascines loaded with earth, gabions, sandbags, &c.

RE'TRO, a prefix to many words, as in retrocession, retrogradation, &c.; implying a going backward.

RETROCESSION OF THE EQUINOXES, in astronomy, the going backwards of the equinoctial points of the signs Aries and Taurus.

RETROFLEX, in botany, bent in different directions, usually in a distorted manner; as, a *retroflex* branch.

RETROFRACT, or RETROFRACTED, in botany, bent back towards its insertion, as if it were broken; as a *retrofract* peduncle.

RETURN', in law, a certificate from sheriffs and bailiffs of what is done in the execution of a writ.——*Return days*, certain days in term time for the return of writs.——In military and naval affairs, an official account, report, or statement rendered to the commander; as, the *return* of men fit for duty; or the *return* of provisions, ammunition, &c.——*Returns*, in commerce, that which is returned, whether in goods or specie, for merchandise sent abroad. Also, the return of money laid out in the way of trade; as, "small profits bring quick returns."——*Returns of a mine*, in fortification, the windings and turnings of a gallery leading to a mine.——*Returns*, in military affairs, statements given in by the officers of regiments, companies, &c. of the number, condition, &c. of their men, horses, &c.

RETROGRADATION, in astronomy, an apparent motion of the planets by which they seem to go backwards in the ecliptic, and to move contrary to the order and succession of the signs.

REUSSITE, in mineralogy, a salt found

THE IMPURITY OF THE THAMES WATER CAUSES IT TO FERMENT WHEN KEPT FOR A SHORT TIME, AND BY THAT MEANS IT CLEANSES ITSELF.

COBALT PRODUCES A BEAUTIFUL BLUE COLOUR, VERY VALUABLE IN PORCELAIN, AS IT ENDURES THE HEAT OF THE FURNACES UNALTERED.



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in the form of a mealy efflorescence, or crystalized in flat six-sided prisms, and in acicular crystals.

REVE'ILLE, in military affairs, the beat of drum about break of day, to give notice that it is time for the soldiers to rise and for the sentinels to forbear challenging.

REVELATION, the act of revealing, or making a thing public that was before unknown. It is also used for the discoveries made by God to his prophets, and by them to the world; and more particularly for the books of the Old and New Testament. The principal tests of the truth of any revelation are, its being worthy of God, and consistent with his known attributes; and in its having a tendency to refine, purify, and exalt the mind of man to an imitation of the Deity in his moral perfections.

REVELATIONS, Book of. [See Apocalypse.]

REV'ENUE, in a general sense, is an annual or continual income, or the yearly profit that accrues to a man from his lands or possessions; but in modern usage, *revenue* is generally applied to the annual produce of taxes, excise, customs, duties, &c. which a nation or state collects or receives into the treasury for public use.——The *royal revenue* is that which the British constitution has vested in the sovereign, to support the regal dignity and power. This is either *ordinary* or *extraordinary*. There was a period when the ordinary revenue of the crown was sufficient to defray the expenses of government, without recurrence to taxes; but much of this is, at the present day, in the hands of lords of manors and other subjects, to whom it has been granted from time to time by the kings of England. From this cause, the crown has become almost dependent on the people for its ordinary support and subsistence; and though at first sight it might seem desirable that now, as heretofore, the executive power were in possession of an hereditary estate and hereditary claims, adequate to the burdens of the community, without the assistance of imposts, yet the least reflection convinces us that the security of political liberty consists in the reverse. The ordinary revenue of the crown is now, as above remarked, but trifling: the *extraordinary*, which includes the whole amount of the taxes yearly voted by parliament, is that which is applied to the expenses of government, and out of which the *civil list*, or more immediate revenue of the crown, is granted. Out of the civil list, are paid the salaries of the ministers, judges, &c.; and only a comparatively small part really belongs to the personal expenditure of the sovereign.

REV'ERIE, a loose or irregular train of thoughts, occurring in musing or meditation; or any wild, extravagant conceit of the fancy or imagination.

REVER'SION, in law, is when the possession of an estate which was parted with for a time returns to the donor or his heirs. Also the right which a person has to any inheritance, or place of profit, after the decease of another.

REVET'MENT, in fortification, a strong wall on the outside of a rampart, intended to support the earth.

REVIEW', in military tactics, the display of a body of troops, for the purpose of exhibiting the state of their appearance and discipline before some superior officer or illustrious personage.——*Review*, in literature, a critical examination of a new publication. Also a periodical publication containing critical examinations and analyses of new works. The person who performs this duty is called the *reviewer*.——*Review* (bill of), in chancery, a bill where a cause has been heard, but some errors in law appearing, or some new matter being discovered after the decree was made, this bill is given for a fresh examination into the merits of the cause.

REVI'SE, a second proof-sheet of a work, for the revisal or re-examination of the errors corrected.——The act of *revising* a book or writing for publication, is termed a *revision*.

REVI'VOR, in law, the reviving of a suit which is abated by the death of any of the parties. This is done by a *bill of revivor*.

REVOKE, to reverse or repeal. A law, decree, or sentence is revoked by the same authority which enacted or passed it. A devise may be *revoked* by the devisor, a use by the grantor, and a will by the testator.——A law may cease to operate without an express *revocation*.——To *revoke* at cards is to renounce.

REV'OLUTE, in botany, an epithet for rolled back or downwards; as, *revolute* foliations or leafing, when the sides of the leaves in the bud are rolled spirally back or towards the lower surface.

REVOLU'TION, in politics, a material or entire change in the constitution of government. Thus the *revolution* in England, in 1688, was produced by the abdication of king James II. the establishment of the house of Orange upon the throne, and the restoration of the constitution to its primitive state. In like manner, though with very different consequences, the *revolution* in France effected a change of constitution: but at the bare mention of that dreadful era, when insatiate anarchy grew frantic with its own excesses, the mind recoils with horror, and we are glad to throw over it the mantle of oblivion.——*Revolution*, in physics, the circular motion of a body on its axis; as, the *revolution* of a wheel, &c.——*Revolution*, in astronomy, the motion of any heavenly body in a circular line until it returns to the same point again.

REX SACRO'RUM, among the Romans, was a person appointed to preside in certain sacred duties. He generally performed such office as the kings of Rome had reserved to themselves before the abolition of their power. He was chosen by the *augurs* and *pontifices*, at the establishment of the commonwealth, that the name of king might not be wholly extinct; and in order that his power might never be dangerous to civil liberty, he was not permitted to have the least share in civil affairs.



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RHAPSODI, in antiquity, a name given to such poets as recited or sung their own works, in detached pieces, from town to town. Hence the term *rhapsodies* was particularly applied to the works of Homer, which were so rehearsed.——In modern usage, a collection of passages, composing a new piece, but without necessary dependence or natural connection, is called a *rhapsody*.

RHENISH, pertaining to the river Rhine, or to Rheims in France; as, *Rhenish* wine.

RHETIAN, pertaining to the ancient Rhæti, or to Rhætia, their country, as the *Rhætian* Alps, now the country of Tyrol and the Grisons.

RHETORIC, the art of speaking with propriety, elegance, and force; or, as lord Bacon defines it, the art of applying and addressing the dictates of reason to the fancy, and of recommending them there so as to affect the will and desires. Rhetoric and oratory differ from each other as the theory from the practice; the rhetorician being the one who describes the rules of eloquence, and the orator he who uses them to advantage. The parts of rhetoric are, *invention*, *disposition*, and *elocution*. The forms of speech by which propriety and elegance are produced, are denominated *tropes* and *figures*. The general manner in which the orator employs his words for the formation of his speech is called *style*, which is variously distinguished. Rhetoric divides an oration or speech into five parts: the exordium, narration, confirmation, refutation, and peroration. The *exordium* is the part in which the speaker prepares the minds of the auditors for what he is about to advance. It ought to be expressed with considerable care and perspicuity, and the matter and manner should be to the purpose, brief, and modest. The *narration* is the recital of facts or events; and should have the qualities of clearness, probability, brevity, and consistency. The *confirmation* establishes the proofs of a discourse, and arranges them in the manner best adapted to enforce conviction. The *refutation*, or anticipation, furnishes arguments to answer the assertions that may be opposed to the narration. The *peroration*, or conclusion, should recapitulate the whole with condensed force and energy.

RHEUM, in medicine, an inflammatory action of the mucous glands, attended with increased discharge and an altered state of their excreted fluids.——*Rheum*, in botany, a genus of plants, class 9 *Enneandria*, order 3 *Trigynia*.

RHEUMATISM, in medicine, a painful disease affecting the muscles and joints of the body, chiefly the larger joints, as the hips, knees, shoulders, &c. It may arise at all times of the year, when there are frequent vicissitudes of the weather from heat to cold, but the spring and autumn are the seasons in which it is most prevalent.

RHINOCEROS, in zoology, a quadruped of the order *Feræ*. This animal is only exceeded in size by the elephant: its nose is armed with a horny substance, projecting, in the full grown animal, from two to three feet, and is a weapon of defence which secures him from almost every attack. Even the tiger, with all his ferocity, is but rarely daring enough to assail him. The skin of the rhinoceros is in some parts so thick that it is scarcely penetrable by the sharpest sabre or even a musket-ball. He is not ferocious unless provoked: runs with great swiftness, and rushes through brakes and woods with an energy to which everything yields. The rhinoceros delights in retired places near lakes and streams, and appears to derive one of his greatest satisfactions from rolling in the mud.

RHINOCEROS-BIRD, in ornithology, a bird of the genus *Buceros*, having a crooked horn on the forehead, joined to the upper mandible.

RHODIUM, in mineralogy, a metal discovered among the grains of crude platina by Dr. Wollaston. When pure it is brittle, and requires a much higher temperature for its fusion than any other metal, unless it be iridium. It readily alloys with every other metal, except mercury, and is insoluble in all acids.

RHODODENDRON, in botany, the dwarf rose-bay; an evergreen shrub with large handsome flowers of a pink or rose colour.——A genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The species are shrubs.

RHODONITE, a mineral of a reddish hue and splintery fracture, occurring compact or fibrous in parts of Germany.

RHOETIZITE, a mineral of a white colour, occurring in masses or in radiated concretions.

RHOMBO, or RHOMBUS, in ichthyology, a species of *pleuronectes*, with the eyes on the left side: it is a moderately large fish, but is not so thick and fleshy as the turbot.

RHOMBOID, in geometry, a quadrilateral figure whose opposite sides and angles are equal, but which is neither equilateral nor equiangular.——In anatomy, the *rhomboid muscle* is a thin, broad, and obliquely square fleshy muscle, situated between the basis of the scapula and the spina dorsi.

RHOMB-SPAR, a mineral of a grayish white, and crystalized in rhomboids, occurring massive, and imbedded in chlorite slate, limestone, &c. It consists chiefly of carbonates of lime and magnesia.

RHOMBUS, or RHOMB, in geometry, an oblique-angled parallelogram, or a quadrilateral figure whose sides are equal and parallel, but the angles unequal, two of the opposite ones being obtuse, and two acute. It consists of two equal and right cones united at the base.

RHUBARB, a valuable medicinal root growing in China, Turkey, and Russian Tartary, of which that from Turkey is the most esteemed. It is a plant of the genus *Rheum*, of several species; as, the raphontic, or common rhubarb; the palmated or true Chinese rhubarb; the compact or Tartarian; the undulated, or waved-leaf Chinese rhubarb; and the ribes, or currant rhubarb of



RHETORICAL PRODUCTIONS REQUIRE A DIFFERENT STYLE OF COMPOSITION FROM THOSE WORKS WHICH ARE DESIGNED FOR READERS.

THE ATHENIAN "RHETORES" WERE TEN ORATORS ELECTED BY LOT TO PLEAD PUBLIC CAUSES IN THE SENATE-HOUSE OR ASSEMBLY.

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Mount Libanus. There is also a species of rhubarb cultivated in English gardens, which makes agreeable spring tarts, and is considered very wholesome.

RHUS, in botany, a genus of plants, class 5 *Pentandria*, order 3 *Trigynia*. The species are trees and shrubs; as the different kinds of Sumach.

RHYME, in versification, the correspondence of sound between the last syllable or syllables of one verse, and the last syllable or syllables of a verse succeeding immediately, or at no great distance. To constitute this correspondence in single words or in syllables, it is necessary that the *vowel* and the *final* articulations or consonants, should be the same, or have nearly the same sound. The *initial* consonants may be different, as in *hope* and *rope*, *live* and *give*, &c.

RHYMOPŒ'IA, in ancient music, that part of the science which prescribed the laws of rhyme, or what appertained to the rhythmic art.

RHYTHM, or RHYTH'MUS, in music, the measured division of time, or the proportion which the parts of the movement have to each other. In *poetry*, it is the relative duration of the moments employed in pronouncing the syllables of a verse; and in *music*, the relative duration of the sounds that enter into the composition of an air. The poetical rhythm requires a succession of motions of regular duration, which, variously interrupted, must yet be obvious, and combined according to the rules of beauty and grace, so as to form an harmonious whole.

RI'AL, a gold coin of the value of ten shillings sterling, formerly current in Britain.

RIB, in anatomy, a bone which forms a part of the frame of the thorax. In the human body there are twelve ribs on each side, proceeding from the spine to the sternum, or towards it, and serving to inclose and protect the heart and lungs.——In naval architecture, a piece of timber which forms or strengthens the side of a ship.—— In botany, the continuation of the petiole along the middle of a leaf, and from which the veins branch out.

RIB'BON, a narrow web of silk, worn either as a badge or as an ornamental part of dress. Ribbon-weaving is an important branch of manufacture, giving employment to numerous hands, and displaying much taste and skill.——*Ribbon*, in naval architecture, a long narrow flexible piece of timber, nailed upon the outside of the ribs, from the stem to the sternpost, so as to encompass the ship lengthwise.

RICE, in botany, a plant of the genus *Oryza*, the seed of which is used as corn. The calyx is a bivalvular uniflorous glume; the corolla bivalvular, nearly equal, and adhering to the seed. It is cultivated in Italy, Greece, and over nearly the whole of Asia. It loves a watery soil, and to whatever height the water rises, wherever it is planted, the growth of the rice keeps pace with it, the summit always appearing above the surface of the water In this necessary property, rice resembles many other aquatic plants. All rice, however, is not the produce of a watery soil; for the upland rice, which is the best, will not thrive there. This grain forms a large portion of the food of the inhabitants of all warm climates, for which it indeed seems specially provided by the all-wise Creator.

RICK'ETS, (technically RACHI'TIS), in medicine, a disease which affects children, and in which the joints become knotted, and the legs and spine grow crooked

RIC'OCHET, or RIC'OCHET-FIRING, in gunnery, the firing of guns, mortars, or howitzers with small charges, and elevated a few degrees, so as to carry the balls or shells just over the parapet, and cause them to roll along the opposite rampart. These batteries are called *ricochet-batteries*.

RIDE, a term made use of in a variety of senses with reference to a ship's position or motion.

RIDEAU', in fortification, a rising ground commanding a plain: also a trench covered with earth in form of a parapet to shelter soldiers.

RI'DER, or RI'DER-ROLL, in law, a schedule, or small piece of parchment, often added to some part of a record or act of parliament.

RI'DING [corrupted, according to Blackstone, from *trithing*, third], one of the three jurisdictions into which the county of York is divided, anciently under the government of a reeve.

RIFACIMENTO, an Italian word, of late often used in English, to denote a remaking or furbishing up anew. Its most usual application is to the process of recasting literary works, so as to adapt them to a somewhat different purpose or to a changed state of circumstances.

RI'FLE, a gun having several spiral grooves or channels cut in the barrel. English rifles are generally charged at the breech, the piece being for this purpose made larger there than in any other part. The powder and bullet are put in through the side of the barrel by an opening, which, when the piece is loaded, is filled up with a screw. By this means, when the piece is fired, the bullet is forced through the grooves, and acquires a continuous spiral motion as well as its progressive one.

RI'FLEMEN, soldiers armed with rifles, and employed as marksmen to fire behind hedges, &c.

RIG'GING, the ropes belonging to a ship, by which the masts are sustained and ascended, and the sails managed. The *rigging* is of two kinds, *standing* rigging, as the shrouds and stays, and *running* rigging, such as braces, sheets, halliards, &c. The names and uses of the several ropes, and the dexterous management of them, constitute an able sailor.

RING-BONE, in farriery, a callus growing in the hollow circle of the little pastern of a horse, just above the coronet.

RING'DOVE, in ornithology, the *Columba palumbus*, the largest of the European species of pigeons.



A QUARTER OF A FOUND OF RICE, SLOWLY BOILED, WILL YIELD MORE THAN A FOUND OF SOLID AND NUTRITIVE FOOD.

RICE, FOR ITS EXCELLENCE AND CHEAPNESS, CLAIMS ATTENTION AS A GENERAL ARTICLE OF SUSTENANCE FOR THE POORER CLASSES.

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RIN'GENT, in botany, an epithet applied to an irregular monopetalous corolla, whose border is usually divided into two parts, called the upper and lower lip

RING'LEADER, the chief or leader of any association of men engaged in an illegal enterprise, as rioters, mutineers, &c.

RI'OT, in a general sense, means a tumultuous assembling of twelve persons or more, and not dispersing upon proclamation.—— *Riot Act*, an act of parliament prohibiting riotous or tumultuous assemblies, which being read by a magistrate or peace officer to the mob, obliges all persons to disperse within an hour, on pain of being apprehended as rioters.

RITE, a formal act of religion or other solemn duty; the manner of performing divine service as established by law or custom.

RITORNEL'LO (*Italian*), in music, a passage which is played whilst the principal voice pauses: it often signifies the introduction to an air or any musical piece. This *ritornello* is often repeated after the singing voice has concluded; hence the name.

RITUAL, a book containing the rites, or directing the order and manner to be observed in celebrating religious ceremonies, and performing divine service in the church.

RIV'ERS, large streams of water flowing through channels or low parts of the surface of the earth, and pursuing their course towards the sea. They produce a variety of phenomena and service to the inhabitants of their banks, though often destruction from overflowing them, owing to inattention in not rendering their courses or outlets proportionate to their occasional increase. The largest rivers in the world are the Amazon and La Plata, in South America; the Mississipi, Missouri, and St. Lawrence, in North America; the Kian Kiou, the Hoanho, the Lena, the Ganges, the Indus, and the Euphrates, in Asia; the Nile in Africa; and the Volga, the Danube, and the Rhine, in Europe. Many of the largest rivers mingle with the sea by means of a single outlet, while others before their termination divide into several branches. This circumstance will depend upon the nature of the soil of the country through which a river runs; but it also frequently results from the velocity of the stream being so much diminished in its latter stage, that even a slight obstacle in the ground has power to change its course, and a number of channels are thus produced.——In a very interesting work, entitled "The Thames and its Tributaries, by C. Mackay," is the following spirited exordium—"Rivers have everywhere been the objects of love and adoration. A sect of the ancient Persians reverenced them so highly, that they deemed it sacrilege to pollute them. For countless ages the dwellers by the Ganges have looked upon it as a god, and have deemed it the summit of human felicity to be permitted to expire upon its banks. The Egyptian still esteems the Nile above all earthly blessings; and the Abyssinian worships it as a divinity. Superstition has peopled these and a thousand other streams with a variety of beings, or personified them in human shapes, the better to pay them homage. Rivers all over the world are rich in remembrances. To them are attached all the poetry and romance of a nation. Popular superstition clings around them, and every mile of their course is celebrated for some incident,—is the scene of a desperate adventure, a mournful legend, or an old song. What a swarm of pleasant thoughts rise upon the memory at the sole mention of the Rhine!—what a host of recollections are recalled by the names of the Danube, the Rhone, the Garonne, the Meuse, the Seine, the Loire, the Tagus, the Guadalquivir!—even the low-banked and unpicturesque Elbe and Scheldt are dear as household things to the neighbouring people. Their praises are sung in a hundred different idioms; and the fair maidens who have dwelt upon their banks, and become celebrated for their beauty, their cruelty, or their woe, have had their names mingled with that of the river in the indissoluble bonds of national song. To the man who has a catholic faith in poetry, every river in Scotland may be said to be holy water. Liddell, and Tweed, and Dee,—Tiviot, and Tay, and Forth, and doleful Yarrow, sanctified by a hundred songs. Poetry and romance have thrown a charm around them, and tourists from every land are familiar with their history. Great writers have thought it a labour of love to collect into one focus all the scattered memoranda and fleeting scraps of ballads relating to them, until those insignificant streams have become richer than any of our isle in recollections which shall never fade."

RIX-DOL'LAR, a silver coin in Germany, Denmark, and Sweden, worth from three to four shillings sterling. In some parts its value is the same as the American dollar, or *4s. 6d.*

ROACH, in ichthyology, a fish of the genus *Cyprinus* or carp kind.

ROAD, a highway, or a way prepared for travellers; it is either a carriage road, where carriages may pass, or a foot road or path for passengers.——Military roads were formerly constructed by the Romans for the passage of their armies, of which there are still vestiges in England. Roads are now principally made by stones broken up into small pieces and bound together with the earth, which is called macadamizing, from the name of the person with whom the plan originated. The formation of good roads gives the greatest facility to commerce, and contributes in an eminent degree to the progress of civilization; for it is well known, that wherever the means of internal communication are deficient in a country, the people are less polished, and generally ill supplied with many of the necessaries, as well as the luxuries of life.——The following is a most discouraging, but, we fear, too true an account of the state of our turnpike-roads, financially considered:—"At the present time (1840) there are 22,000 miles of turnpike roads in England and Wales; upon which there are mortgages to





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COUNTRIES FORMED OF SECONDARY ROCKS ARE GENERALLY CAPABLE OF CULTIVATION OVER THE WHOLE OF THEIR SURFACE.

the amount of 8,365,267*l.*, being an increase of 1,040,464*l.* in the last nine years! The annual receipts are under 1,500,000*l.*; the expense of repairs, 36*l.* per mile per annum; of improvements, 9*l.* per mile; and of surveyors' salaries and other charges, 6*l.* per mile."——We can well remember the time when a "turnpike bond" was considered a most eligible security for our spare cash; but in this railroad age, we suppose the turnpike trusts will not be much longer trusted, and travellers whose faith in high-pressure engines is not all-sufficient, or who may have occasion to deviate from the *direct line*, must soon be content to pick their way through the mire, as their ancestors did before them, when turnpike-gates were just coming into fashion, and the power of steam was altogether unknown.

ROAD, or ROAD'STEAD, a place fit for anchorage at some distance from the shore.

ROAST'ING, in metallurgy, the separation of volatile bodies from those which are more fixed, by the combined action of air and fire; and is generally the first process in the separation of metals from their ores: it differs from sublimation only in this, that in this operation the volatile parts are dissipated, when resolved into vapours: whereas in that, they are preserved.

ROBIN'IA, in botany, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria*. The species are shrubs, as the rose-acacia, &c.

ROC'AMBOLE, in botany, the *Allium scorodoprasum*, a sort of wild garlic, growing naturally in Denmark and Sweden. It has a heart-shaped root at the side of the stalk.

RO'CHELLE SALT, in chemistry, the popular name by which the tartrate of potash and soda is known.

ROCH'ET, a surplice; the white upper garment of a priest worn while officiating.

ROCK, a stony mass, forming a portion of the substance of our globe: rocks are in general disposed in mountainous ranges, though in some few instances they are found existing in immensely large separate masses. Granite stands at the head of the primary rocks. It consists of grains of felspar, quartz and mica intimately aggregated together. The highest mountains in Britain are composed of granite and its associates; but these are merely trifling protuberances on the earth's face, when compared with the exceeding heights of the Alpine chain, or the yet more elevated mountains of South America, and of the Asiatic continent, which consist of the same materials. Some of the varieties of granite are extremely permanent even in mountain masses, and seem almost imperishable, when considered in respect to their uses in the arts. In England and Wales, granite and granitic rocks occur in Cornwall, Devonshire, North Wales, Anglesea, the Malvern Hills, in Leicestershire, Cumberland, and Westmoreland. [See GEOLOGY.]

ROCK'-BASIN, a cavity or artificial basin cut in a rock for the purpose, as is supposed, of collecting the dew or rain for ablutions and purifications prescribed by the Druidical religion.

ROCK-BUTTER, in chemistry, a subsulphite of alumine, oozing from aluminous rocks.

ROCK CRYSTAL, in mineralogy, the most perfect variety of siliceous earth or quartz. When purest it is white or colourless, but is often found of a grayish white or pale yellow colour. Its most usual form is that of hexagonal prisms, surmounted by hexagonal pyramids.

ROCK'ET, in pyrotechny, an artificial fire-work, consisting of a cylindrical case of paper, filled with a composition of combustible ingredients. This being tied to a stick and fired, ascends into the air and bursts, presenting a shower of stars, coloured according to the nature of the composition. [See CONGREVE ROCKETS.]——*Rocket*, in botany, the name of several kinds of plants of different genera.

ROCK'ING-STONES. Of these rocks, called also Loggan or Laggan stones, there are several among the picturesque barriers of the British coast. They appear to consist of an immense mass, loosened in some convulsion of nature, and with a slightly rounded base resting on a flat surface of rock below, which is so nearly balanced, that an individual can move or rock it. These stones have been variously accounted for by antiquarians; but Dr. Hibbert thinks that the particular use to which they were applied will ever remain in obscurity: "as they are products of every country where loose detached rocks of a particular structure have been submitted to the operation of atmospheric agents, it is to be expected that the fables assigned to their origin would be regulated by the peculiar mythology of the people among whom they have become the object of notice and wonder."

ROCK'-SALT, fossil or mineral salt, dug from the earth. [See SALT.]

ROD, a measure of length containing sixteen feet and a half. In many parts of England the word *rod* is universally used for *pole* or *perch*.——Also, an instrument of punishment or correction, "more honoured in the breach than the observance."

RO'EBUCK, in zoology, a species of deer, the *Cervus capreolus*, with erect cylindrical branched horns, forked at the summit. This animal is remarkable for its elegant shape and activity; is one of the smallest of the cervine genus; and, like the goat, prefers a mountainous country.

ROEL'LA, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are mostly shrubs.

RO'GA, in antiquity, a present which the emperors made to the senators, magistrates, and even to the people. These *rogæ* were distributed by the emperors on the first day of the year, on their birth-day, or on the *natalis dies* of the cities.

ROGATION, in the Roman jurisprudence, a demand made by the consuls, or tribunes of the people, when a law was proposed to be passed.——*Rogatio* is also used for the decree itself made in consequence

THE PRIMARY AND TRANSITION ROCKS CONTAIN FEW BALINE OR INFLAMMABLE FOSSILS, BUT GENERALLY MANY ORES.



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of the people giving their assent to this demand, to distinguish it from a *senatus consultum*, or decree of the senate.

ROGA'TION-WEEK, the week preceding Whitsunday, thus called from the three *rogation-days* or fasts therein, viz. Monday, Tuesday, and Wednesday, on each of which extraordinary prayers and processions were made for the fruits of the earth. The word *rogation* is derived "a rogando Deum," "petitioning God."

ROLL, an official writing; a list, register, or catalogue; as, a muster *roll*: a court *roll*, &c.——*Roll call*, the calling over the names of the men who compose any part of a military body.——*Rolls of parliament*, the manuscript registers, or rolls of the proceedings of our ancient parliaments, which before the invention of printing were all eggrossed on parchment, and proclaimed openly in every county. In these *rolls* are also contained a great many decisions of difficult points of law, which were frequently in former times referred to the decision of that high court.

ROLLER, in ornithology, a genus of birds allied to the crows and jays, though more wild and intractable than either. The plumage of almost all the species is very beautiful, being in general an assemblage of blue and green, mixed with white, and heightened by the contrast of more obscure and less vivid colours. They are not carnivorous, and their flesh is said to be palatable.——*Roller*, a piece of wood, iron, brass, &c. of a cylindrical form, used in the construction of several machines, both in husbandry and the arts.——In surgery, a long and broad bandage usually of linen cloth, to be rolled round any part of the body.

ROLLING-MILL, a machine for working metals into plates, or bars which are required of an even thickness. Rolling-mills are chiefly used for drawing out iron bars after they have been manufactured into bar iron by the forge hammer.

ROLLING-PRESS, in mechanics, an engine consisting of two cylinders, by which cloth is calendered, waved, &c. Also, a machine or press for taking impressions from steel or copper-plate engravings. There are also a variety of rolling-presses used in other branches of manufacture.

ROMAN, a native or citizen of Rome; or something pertaining to the place, its people, or their religion.——One of the Christian church at Rome to which St. Paul addressed an epistle, consisting of converts from Judaism or paganism.——In literature, the ordinary printing character now in use, in distinction from the *Italic*.

ROMAN CATHOLICS, that society of Christians whose members acknowledge the pope as visible head of the church. [See CATHOLIC.]

ROMANCE, in literature, a tale or fictitious history of extraordinary adventures, intended to excite the passions of wonder and curiosity, and to interest the sensibilities of the heart. The *romance* differs from the *novel*, as it treats of great actions and extravagant adventures, soaring beyond the limits of fact and real life. Romances have of late years given way to historical novels; and even such as are occasionally published are very different from those of the olden time, in which the blandishments of beauty and the enterprizes of chivalry were incongruously blended with fictions exceeding all bounds of human credulity.

ROMISH, relating to Rome, or to the religion professed by the people of Rome; as, the *Romish* religion, ritual or ceremonies.

ROMPEE', in heraldry, an ordinary that is broken, or a chevron, &c. whose upper parts are cut off.

RON'DEAU, a species of poetry, usually consisting of thirteen verses, of which eight have one rhyme, and five another. It is divided into three couplets, and at the end of the second and third, the beginning of the rondeau is repeated in an equivocal sense, if possible.

RON'DO, in music, either vocal or instrumental, generally consists of three strains, the first of which closes in the original key, while each of the others is so constructed as to reconduct the ear in an easy and natural manner to the first strain.

ROOK, in ornithology, a bird of the genus *Corvus*. It differs from the crow in not feeding on carrion, but on insects and grain; and it is gregarious. Rooks are very destructive of corn, especially of wheat, and it behoves the husbandman to keep a watchful eye on his newly-sown fields, for if neglected three or four days when the blade first appears, a good crop may be destroyed in embryo.

ROOT, in botany, that part of a plant which is under ground, and serves to support the plant in an erect position, while by means of its fibrils it imbibes nourishment from the earth, which ascends to the stem, branches, and fruit.——*Root*, in arithmetic, a number or quantity which, multiplied by itself, produces a higher power, as 2, the square root of 4 or the cube root of 8.

ROPE, a large kind of cordage, formed by the twisting of several strands of yarn together; the smallest sort of rope is called *cord*, and the larger kinds *cable*. Large ropes are distinguished into two main classes, viz. the *cable-laid* and *hawser-laid*. The former are composed of nine strands, while the latter consist only of three strands. Ropes of from one inch to two inches and a half in circumference are usually hawser laid; of from three to ten inches, are either hawser or cable-laid; but when more than ten inches, are always cable-laid.——*Rope making*, the process of twisting yarn into ropes by means of a wheel.——*Rope-walk*, a long covered walk, or a long building over smooth ground, where ropes are manufactured.——*Rope yarn*, the rope of any yarn untwisted.——*Rope-dancer*, one that balances himself, and performs sundry evolutions on a rope, either suspended as a slack-rope, or extended as a tight-rope.

ROSA'CEOUS, in botany, an epithet for a flower composed of several petals, arranged in a circular or rose-like form.



THE "RONDO" TAKES ITS NAME FROM THE CIRCUMSTANCE OF THE MELODY "GOING ROUND" TILL IT ARRIVES AT THE FIRST STRAIN.

THE ROOTS OF A TREE PROVIDE ITS JUICY FOOD, AND IF THEY ARE INJURED, THE TREE MUST PERISH AS AN ANIMAL DOES BY HUNGER.

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cheeks, and when properly prepared, it has been termed by an eminent scientific writer, "the only cosmetic which can be applied without injury to brighten a lady's complexion." Seen at a moderate distance, by candlelight, it may certainly pass for the bloom of health; but in the face of day the "roseate hue of art" is generally discernible without a very close inspection.

ROUE', a term applied to a person, in the fashionable world, who, regardless of moral principle, devotes his life to sensual pleasures.

ROUGH'-CASTING, a kind of mortar used as a covering for external walls, which is thrown on roughly instead of being plastered on.

ROUND'-HEADS, in British history, a name given, during the civil war, to the puritans or members of the parliament party, from the practice which prevailed among them of cropping the hair round.

ROUND'ROBIN, a term applied to a memorial or remonstrance drawn up by any body of men (though the practice is almost entirely confined to the army and navy), who have determined to stand by each other in making a statement of their common grievances to the government, or some person high in authority. The term is supposed to be corrupted from *ruban rond*, because their signatures are written round the remonstrance, or in a circular form, so that it cannot be seen who signed it first.

ROY'AL, pertaining to or becoming one who is invested with regal power.——Among seamen, a small sail spread immediately above the top-gallant-sail; sometimes termed the top-gallant-royal.——*Royal Society*, a society incorporated by Charles II. under the name of "The President, Council, and Fellows of the Royal Society, for the Improvement of Natural Philosophy."——*Royal Academy of London*, a corporation instituted by George III. for the advancement of drawing, painting, engraving, sculpture, modelling, and architecture.——*Royal Institution*, a corporation erected in the year 1800; the great object of which is to render science appplicable to the comforts and conveniences of mankind.

ROW'EN, or ROW'ENS, a name given to the second growth of grass in a season. Its use, perhaps, is local; but, as we understand the term, it is used to distinguish the *second* from the *first crop* of grass mowed in a season.

ROW-PORT, a small square hole in the side of light vessels of war, near the surface of the water, for the use of an oar for rowing in a calm.

RUB'BLE-STONE, a stone, so called from its being rubbed and worn in water.

RU'BEFACIENT, in medicine, an external application which produces redness of the skin.

RU'BELLITE, in mineralogy (called also *red shorl* or *red tourmalin*), a siliceous mineral of a red colour of various shades. It occurs in accumulated groups, with straight tube-like strie. In a red heat, it becomes white, and seems to phosphoresce.

RU'BICEL, in mineralogy, a variety of the ruby, of a reddish colour, from Brazil.

RU'BIGO, in botany, a kind of mildew which appears on the leaves and stems of many plants, and has been found to consist of a small fungus, supposed to arise from a dewy moisture, which, not being exhaled by the heat of the sun, grows and corrupts the inner substance of the plants.

RU'BLE, a Russian silver coin, value about 2*s.* 7*d.*; in Russia, a hundred copecks.

RU'BRIC, in the canon law, a title or article in certain ancient law books; so called because written in red letters. Also, the directions given in the Book of Common Prayer.

RU'BY, a precious stone, next to the diamond in hardness and value. Its constituent parts are alumina, silica, carbonate of lime, and oxyde of iron. The most esteemed, and, at the same time, rarest colour, of the oriental ruby, is pure carmine, or blood red of considerable intensity, forming, when well polished, a blaze of the most exquisite and unrivalled tint. It is, however, more or less pale, and mixed with blue in various proportions; hence it occurs rose-red and reddish white, crimson, peach-blossom red, and lilac blue—the latter variety being named oriental amethyst. A ruby, perfect both in colour and transparency, is much less common than a good diamond, and when of the weight of three or four carats, is even more valuable than that gem. The king of Pegu, and the monarchs of Siam and Ava, monopolize the rarest rubies; the finest in the world is in the possession of the first of these kings: its purity has passed into a proverb, and its worth, when compared with gold, is inestimable.

RUDD, in ichthyology, a fish of the genus *Cyprinus*, with a deep body like the bream, but thicker, a prominent back, and small head.

RUD'DER, in navigation, part of the helm of a ship, consisting of a piece of timber hung on hinges at the stern-posts, which by being turned either way directs the course of the vessel. The rudder is managed by means of the tiller or wheel.

RU'DIMENTS, the first elements or principles of any art or science.——In botany, the germen, ovary or seed-bud, is the *rudiment* of the fruit yet in embryo; and the seed is the *rudiment* of a new plant.

RUDOLPHINE TA'BLES, a celebrated set of astronomical tables, published by Kepler, and thus entitled in honour of the emperor Rudolph or Rudolphus.

RUFF, in ornithology, a species of birds which derive their name from the disposition of the long feathers of the neck, which stand out like the ruff formerly worn; it is, however, only the male that is furnished with this appendage, which he does not gain till the second year. They are birds of passage, appearing at certain seasons of the year in great numbers in the north of Europe. They are generally taken in large nets. When fattened they are dressed like the woodcock, and their flesh is highly





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WHEN RUM IS WELL RECTIFIED, IT SOON BECOMES MELLOW.



THE FLAVOUR AND TASTE PECULIAR TO RUM ARE DERIVED FROM THE ESSENTIAL OILS CARRIED OVER IN DISTILLATION.

esteemed. Their pugnacious disposition is so strong, that when they are kept for the purpose of fattening, their place of confinement is obliged to be dark, as, the moment any light is admitted, they attack each other with such fury, and fight with such inveteracy, as to occasion great slaughter.

RU'INS, the remains of a decayed or demolished building, fortress, city, or work of art: as the *ruins* of Palmyra, the *ruins* of an ancient castle, &c.

RULE, that which is established as a principle, or settled by authority for guidance and direction. Thus, a statute or law is a *rule* of conduct for the citizens of a state; precedents in law are *rules* of decision to judges.——*Rule*, in monasteries, corporations, or societies, a law or regulation to be observed by the society and its particular members.——In grammar, an established form of construction in a particular class of words.

RULE OF THREE, in arithmetic, a rule which directs, when three terms are given, how to find a fourth, which shall have the same ratio to the third term, as the second has to the first.

RUM, a well known spirituous liquor, distilled from molasses and the refuse of the cane juice, in the West Indies, whence it is imported in large quantities. Rum of a brownish transparent colour, smooth oily taste, strong body and consistence, good age, and well kept, is the best; and that from Jamaica obtains a decided preference. It is customary in some of the West India islands to put sliced pine-apples in puncheons of rum; this gives the spirit the flavour of the fruit, and hence the designation "pine apple rum."

RU'MEN, in comparative anatomy, the paunch, or first stomach of such animals as chew the cud, thence called *ruminant* animals. The only animals endowed with the genuine faculty of *rumination* are the cloven-footed quadrupeds, as oxen, sheep, &c.

RU'MEX, in botany, a genus of plants, class 6 *Hexandria*, order 3 *Trigynia*. The species are perennials.

RUN'CINATE, in botany, an epithet for a leaf, the lobes of which are convex before and straight behind, like the teeth of a double saw, as in the dandelion.

RU'NIC, a term applied to the language and alphabet of the Goths, Danes, and other northern nations. The *Runic* character appears to have been in use before the introduction of Christianity in this part of the world, and has therefore a sort of appropriate connection with that early period of European history.

RUN'NER, in sea language, a rope belonging to the garnet, and to the two bolt-tackles. It is reeved in a single block, joined to the end of a pennant, and is used to increase the mechanical power of the tackle.

RUN'NYMEDE, a celebrated meadow where the conference was held June 15th, 1215, between John and the English barons, in which the former was compelled to sign *Magna Charta* and the *Charta de Foresta*. It is five miles east of Windsor, and is now divided into several enclosures.

RUPEE', a coin current in the Mogul empire, and other parts of India. The gold rupee is worth about 2*s.* 6*d.* sterling. Of the silver rupees, the new and the old are of different values.

RUPTURE. [See HERNIA.]

RUS'CUS, in botany, a genus of plants, class 22 *Dioecia*, order *Monadelphia*.

RUSH, a kind of coarse grass that grows in watery lands; the pith is used in some places for wicks to lamps and rushlights. The *flowering rush* is a perennial, and the *sweet rush* a tuberose plant, both of which are cultivated in gardens.

RUS'SIA COM'PANY, a regulated company for conducting the trade with Russia; first incorporated by charter of Philip and Mary, sanctioned by act of parliament in 1566.

RUS'SIA LEATH'ER, the tanned hides of oxen, manufactured in a manner peculiar to the Russians, and much esteemed as a material for binding books and making many articles where a superior kind of durable leather is required. One of the best tests of genuine Russia leather is its throwing out a strong odour of burnt bide upon being rubbed.

RUST, the oxyde of a metal: hence, metals become rusty, when exposed to air or water, by abstracting the oxygen; but grease and varnish protect them, because they consist of hydrogen.

RUSTIC-WORK, in a building, a term used when the stones, &c. in the face of it are hacked or indented so as to be rough.

RU'TA BA'GA, in botany, the Swedish turnip.

RUTH, *Book of*, a canonical book of the Old Testament, being a kind of appendix to the book of Judges, and an introduction to those of Samuel. Its title is derived from the person whose story is therein principally related.

RU'TILL, in mineralogy, an oxyde of titanium, of a red or brownish red colour. It occurs massive, disseminated, membranous, and in crystals.

RYE, an esculent grain that in its growth resembles wheat. It is easily cultivated, and in many parts of the continent, as well as in the north of England, it is made into bread, but it is much coarser than that made of wheat flour. All soils will produce rye, provided they are not too moist; and many barren lands which are unsuitable for the cultivation of wheat, may be sown with this grain to advantage.

RYE-GRASS, in botany, a species of strong grass, of the genus *Hordeum*.

RY'OT, in Hindostan, a renter of land by a lease which is considered as perpetual, and at a rate fixed by ancient surveys and valuations.

THOUGH MANY HAVE ATTEMPTED TO MANUFACTURE "RUSSIA LEATHER" IN OTHER COUNTRIES, THEY HAVE HITHERTO ENTIRELY FAILED.



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THE CONSTANT REPETITION OF THE LETTER S IN ENGLISH WORDS PRODUCES A DISAGREEABLE HISSING SOUND IN OUR VOCAL MUSIC.

# S.

S, the nineteenth letter and fifteenth consonant of our alphabet, is a sibilant articulation; the sound being formed by driving the breath through a narrow passage between the palate and the tongue elevated near it, together with a motion of the lower jaw and teeth towards the upper. The sound of this letter varies, being strong in some words, as in *this, thus*, &c. and soft in words which have a final *e*, as *muse, wise*, &c. It is generally doubled at the end of words, whereby they become hard and harsh, as in *kiss, loss*, &c. In a few words it is silent, as in *isle* and *viscount*. As an abbreviation, in music, S stands for *solo*. In books of navigation, and in common usage, S stands for *south*, S.E. for *south-east*, S.W. for *south-west*, S.S.E. for *south-south-east*, S.S.W. for *south south-west*. In the notes of the ancients, S stands for *Sextus*; Sp. for *Spurius*; and S. P. Q. R. for *senatus populusque Romanus*.

SABÆANS, or SA'BIANS, idolators of the East, who in all ages, whether converted in part to Judaism, Christianity, or Mohammedanism, or unacquainted with either, have worshipped the stars. Some of the Sabæans, who acknowledge the name of Christ, are distinguished by the title of "Christians of St. John," on account of their attachment to the baptism of that forerunner of the Messiah. *Sabaism* bears the marks of a primitive religion: to the adoration of the stars, it joins a strong inculcation of respect for agriculture.

SAB'AOTH, a word of Hebrew derivation, signifying *armies*. It is used, Rom. ix. 29; James, v. 4, "the Lord of Sabaoth."

SABBATA'RIANS, a sect of baptists who are only remarkable for adhering to the Judaic sabbath, the observance of which they contend was not annulled by the Christian dispensation.

SAB'BATH, the *seventh* day of the week, a day appointed by the Mosaic law for a total cessation from labour, and for the service of God, according to the divine command, "Remember that ye keep holy the Sabbath day," &c. From the accounts we have of the religious service practised in the patriarchal age, it appears that immediately after the fall, when Adam was restored to favour through a mediator, a stated form of public worship was instituted, which man was required to observe, in testimony, not only of his dependence on the Creator, but also of his faith and hope in the promise made to our first parents, and seen afar off. In the earliest times of Christianity, the desire of distinguishing the Christian from the Jewish observance, gave rise to the celebration of Sunday, the first day of the week, as a sacred festival in commemoration of our Saviour's resurrection—hence emphatically called "the Lord's day." The converts from Judaism, however, retained the celebration of the Sabbath, though they adopted also that of Sunday; and thus in course of time the strict solemnities of the one became blended with the cheerful piety of the other. But independent of the divine injunction, a sabbath, or weekly day of rest and pious meditation, is an institution, on whichever day kept, highly conducive to the happiness and comfort of mankind.—We may here observe, that this septenary division of time has been, from the earliest ages, uniformly observed over all the eastern world The Assyrians, Egyptians, Arabians, and Persians, made use of a week consisting of seven days. Many futile attempts have been made to account for this uniformity; but a practice so general and prevalent could never have taken place had not the septenary distribution of time been instituted from the beginning, and handed down by tradition.

SABBATICAL YEAR, in the Jewish economy, was every *seventh* year, in which the Israelites were commanded to suffer their fields and vineyards to *rest*, or to lie without tillage. The first *sabbatical* year, celebrated by the children of Israel, was the fourteenth year after their coming into the land of Canaan; because they were to be seven years in making themselves masters of it, and seven more in dividing it amongst themselves. This year was reckoned from *Tisri* or September, and for several reasons was called the year of *release*: 1. because the ground remained entirely untilled; 2. because such debts as had been contracted during the six preceding years, were remitted and cancelled; and 3. because all Hebrew slaves were then set at liberty.

SABEL'LA, in natural history, a genus of the *vermes testacea*, of which there are twenty-five species: *Sabella scrupea* is found in India and the American islands. The shell is subulate, and composed of equal grains of sand. *Sabella alveolata* has numerous parallel tubes, forming in the mass the appearance of honey-combs.

SABEL'LIANS, a sect of Christians founded by Sabellius, at Ptolemais, in the third century. Their doctrine taught that the Father, the Son, and the Spirit are names of the one God under different circumstances.

SA'BLE, in zoology, the brown mustela with gray ears, very like the common weasel in form, but equal to the polecat in size: the fur of this animal is very thick and deep, and remarkably fine and glossy. It is a native of America and the northern parts of Asiatic Russia. It burrows in the earth or under trees; in winter and summer subsisting on small animals, and in autumn on berries. The fur is very valuable.—*Sable*, in heraldry, the tincture of black, represented in engraving by perpendicular and horizontal lines.

THE SKINS OF WILD ANIMALS, IN THEIR ROUGH STATE, ARE CALLED "PELTS;" BUT WHEN PREPARED FOR SALE, THEY ARE CALLED "FURS."

SABLE SKINS HAVE SOMETIMES BEEN FOUND YELLOW AND WHITE.



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DURING THE DARK AGES OF PAGAN SUPERSTITION, WE READ OF HUMAN SACRIFICES, AND OTHER RITES MOST REVOLTING TO HUMANITY.

**SAC**, in law, the privilege enjoyed by the lord of a manor, of holding courts, trying causes, and imposing fines.

**SAC'BUT**, or **SACK'BUT**, a musical wind instrument; a kind of trumpet so contrived that it can be drawn out or shortened according to the tone required.

**SACCA'DE**, a sudden violent check of a horse by drawing or twitching the reins on a sudden, and with one pull.

**SAC'CHARINE ACID**, in chemistry, Acid of Sugar; a white crystalized salt procured by distilling sugar with nitrous acid.

**SACCHAROM'ETER**, the name of an instrument for ascertaining the value of worts, and the strength of different kinds of malt liquors. It is merely an hydrometer contrived to compare the weight of worts with that of equal quantities of the liquor employed in the brewery.

**SACCHOLAC'TIC ACID**, in chemistry, the sugar of milk in combination with oxygen; called also *mucic acid*.

**SAC'CHOLATE**, in chemistry, a salt formed by the combination of the saccholactic acid with different bases, as saccholate of iron, saccholate of ammonia, &c.

**SACK**, a wine much esteemed by our ancestors. It was brought from Spain, and supposed to have been very similar to sherry or canary.——*Sack*, a large cloth bag used for holding and conveying corn, small wares, &c.——Among our rude ancestors, a kind of cloak of a square form, worn over the shoulders and body, and fastened in front by a clasp or thorn. It was originally made of skin, afterwards of wool. In modern times, but not recently, this name has been given to a woman's gown with loose plaits on the back.——*To sack*, is to plunder or pillage a town when taken by assault.

**SAC'RAMENT**, in Christian rituals, is defined an outward sign of a spiritual grace annexed to its use. The Roman church recognizes seven sacraments; baptism, confirmation, the eucharist, penance, extreme unction, ordination, and marriage. The Sabæan Christians reduce the sacraments to four; the eucharist, baptism, ordination, and marriage. The Protestant churches acknowledge only two, the eucharist or Lord's supper, and baptism; but they agree with the Roman church in styling the eucharist, pre-eminently, the *holy sacrament*. The eucharist is also known in the Roman church by the name of "the host."

**SACRAMENTA'LIA**, in ecclesiastical history, certain sacramental offerings formerly paid to the parish priest at Easter, &c.

**SACRAMEN'TUM MILITA'RE**, in antiquity, the name of the oath taken by the Roman soldiers after the levies were completed.

**SAC'RIFICE**, a solemn act of religious worship, consisting in the dedication or offering up something animate or inanimate on an altar, by the hands of the priest, either as an expression of gratitude to the Deity for some signal mercy, or to acknowledge our dependance on him, and conciliate his favour. The Jews had two sorts of sacrifices, taking the word in its most extensive signification: the first were offerings of tithes, first-fruits, cakes, wine, oil, honey, &c., and the last, offerings of slaughtered animals. The principal sacrifices of the Hebrews consisted of bullocks, sheep, and goats; but doves and turtles were accepted from those who were not able to bring the other; and whatever the sacrifice might be, it must be perfect and without blemish. The rites of sacrificing were various, all of which are very minutely described in the books of Moses.

**SAC'RILEGE**, the crime of violating or profaning sacred things; or the alienating to laymen or to common purposes what has been appropriated or consecrated to religious persons or uses.

**SA'CRUM, or OS SACRUM**, in anatomy, the broadest of all the bones in the back; it sustains all the other vertebræ, and in shape somewhat resembles a triangle.

**SAD'DUCEES**, a sect among the ancient Jews, esteemed as free-thinkers, rather than real Jews, though they assisted at all the ceremonies of worship in the Temple. Their origin and name is derived from one Sadoc, who flouriahed in the reign of Ptolemy Philadelphus, about 263 years B.C. They denied the immortality of the soul, and the existence of all spiritual and immaterial beings. They acknowledged, indeed, that the world was formed by the power of God, and superintended by his providence; but that the soul at death suffered one common extinction with the body. They held the scriptures alone to be of divine authority, and obligatory upon men, as a system of religion and morals; and paid no regard to those traditionary maxims and human institutions which the Jews in general so highly extolled, and the Pharisees reverenced even more highly than the scriptures themselves.——The tenets of the Sadducees are called *Sadduciism*.

**SAFE-CON'DUCT**, a pass or warrant of security given by the sovereign under the great seal to a foreigner, for his safe coming into and passing out of the kingdom. Generally speaking, passports have superseded the use of special safe conducts.

**SA'FETY-LAMP**, a lamp invented by Sir Humphry Davy for the use of miners in the coal-mines, to prevent the fatal explosions which have arisen from the use of common lamps. It consists of a lamp surrounded by a wire-gauze, which by confining the flame from the fire-damp, without intercepting the light, enables the miners to work in safety; and which, in gratitude to its illustrious inventor, is, in mining districts, called *the Davy*. Mr. Dillon, an ingenious writer on practical science, maintains, in opposition to Sir Humphry Davy, that the Davy lamp acts by its heat and rarefaction, not from the flame being cooled by the wire-gauze covering. He shows, by a simple experiment, that the Davy lamp is not safe in a current of hydrogen, or carburetted hydrogen gas, which, if steadily directed on the flame of the lamp from a bladder and stop-cock, by cooling the wire-

WHATEVER WAS REARED AND DEAREST TO THEM, EVEN THEIR OWN CHILDREN, WERE BY SOME IDOLATERS REMEMBERED THE MOST WORTHY SACRIFICES.



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gauze, brings the flame of the lamp through the gauze to the mouth of the stop-cock, even should there be six folds of gauze intervening. He shows also, by immersing the lamp, when cold and newly-lighted, into a jar of dense hydrogen, or carburetted hydrogen gas, or an explosive mixture with atmospheric air, that explosion takes place inside and outside of the lamp; whereas, when the lamp has burnt sufficiently long to heat the wire-gauze, no explosion takes place on the outside of the lamp. These experiments appear incontrovertible in support of his theory, which is, "that the wire-gauze is merely the rapid receiver and the retainer of heat, and that it is the caloric in its meshes which prevents the flame of the lamp from being fed by the oxygen of the atmosphere on the outside."—An improved safety-lamp, by Messrs. Upton and Roberts, appears to possess all the advantages desired. There is but one coat of wire-gauze, but it is enclosed in a glass cylinder, in such a manner as to admit the air which feeds the flame only under its bottom, first through an annular range of holes, and next through one disc, or several, of wire-gauze, fixed a little way below the wick. The explosive air, after passing up through these wire-gauze discs, enters a little brass cupola, and is reflected inwards from the orifice at its top upon the flame, whereby it is completely burned before it reaches the cavity of the surmounting cylinder. By this reverberatory action of the air upon the wick, the intensity of the light is at the same time greatly augmented. The wire-gauze can never become very hot, far less ignited in the new lamp. There are, in fact, three impediments to the passage of the flame out of the lamp; first, the stratum of carbonic acid round the light; secondly, the wire-gauze cylinder; and thirdly, the glass cylinder: and even if the glass should be accidentally broken, the lamp is still a complete Davy.

SA'FETY-VALVE, in mechanics, a valve by means of which a boiler is preserved from bursting by the force of steam.

SAF'FLOWER, or BASTARD SAF'FRON, a deep red fecula separated from orange-coloured flowers, particularly those of the *carthamus tinctorius*. The flowers, which are sometimes sold under the name of *saffranon*, are the only parts employed in dyeing. The fine rose colour of safflower, extracted by crystalized soda, precipitated by citric acid, then slowly dried, and ground with the purest talc, produces the beautiful rouge known by the name of *rouge végétale*.

SAF'FRON, a sort of filamentous cake, prepared from the stigmas, with a proportion of the style, of a perennial bulbous plant *(Crocus sativus)*. It contains a yellow matter called *polychroite*, a small quantity of which is capable of colouring a great body of water. It is grown in some of the eastern counties of England, and is also imported from Sicily, France, and Spain. Saffron is used to tinge confectionary articles, liqueurs, and varnishes; and sometimes in colouring butter and cheese. It was also formerly much used in medicine, as well as in the arts, but not much at the present time.

SAGAPE'NUM, in pharmacy, a gum-resin brought from the East in granules and masses. It is of a compact substance, heavy, of a reddish colour, with small whitish or yellowish specks. It is an attenuant, aperient, and discutient.

SAGITTA, in astronomy, the arrow or dart, a constellation of the northern hemisphere, near the eagle. In trigonometry, the versed sine of an arc, so called because it is like a dart or an arrow standing on the chord of the arc.

SAGITTA'RIA, in botany, a genus of plants, class 21 *Monoecia*, order 7 *Polyandria*, so called from the form of the leaves resembling the head of an arrow.

SAGITTA'RII, in the Roman army under the emperors, were young men armed with bows and arrows, who, together with the *Funditores*, were generally sent out to skirmish before the main body.

SAGITTA'RIUS (the *Archer*), in astronomy, the ninth sign of the zodiac, which the sun enters Nov. 22.

SA'GITTATE, in botany, an epithet for a leaf, stipule, or anther, whose shape is triangular, and hollowed at the base, like the head of an arrow.

SA'GO, a species of starch made from the pith of the sago palm, a large tree of the palm kind, growing in the East Indies. The tree being felled, is split asunder lengthwise, and the pith, even in its unprepared state, is found to be eatable. This, however, is reduced, by means of the pestle, into a powder resembling meal. The meal is placed in a large sieve, and the finer particles forced through with water. The flour is afterwards made into a paste, and then dried in a furnace. Sago becomes soft and transparent by boiling in water, and forms a light and agreeable liquid, much recommended in febrile, phthisical, and calculous disorders, &c.

SAGOIN', in zoology, a division of the genus *Simia*, including such of the monkeys of America as have hairy tails, not prehensile.

SAH'LITE, a mineral of a light greenish gray colour, occurring massive, and composed of coarse granular concretions.

SAIC, a Turkish or Grecian vessel, very common in the Levant; a kind of ketch which has no top-gallant-sail, nor mizen-top-sail.

SAIL, in navigation, a large piece of canvas composed of several breadths sewed together, which when extended, by means of lines, is fitted to receive the impulse of wind by which a ship is driven.——*To make sail*, is to extend an additional quantity of sail for the sake of increasing a ship's speed. *To set sail*, to spread or expand the sails; and hence, to begin a voyage. *To strike sail*, to lower the sails suddenly, as in saluting or in sudden gusts of wind.

SAIL'ING, properly denotes the art of navigating and working a ship; or of causing her to observe such motions and directions



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as are assigned by the navigator; in which latter sense sailing differs from the art of navigation, and must be learned by practice on shipboard.—*Sailing* also denotes a particular method of navigation; in which sense we say, *Mercator's* sailing, *plane* sailing, *parallel* sailing, *middle latitude* sailing, and *great circle* sailing.

SAINT, in a limited but the most usual sense of the word, signifies certain individuals whose lives were deemed so eminently pious, that the church of Rome has authorized the rendering of public worship to them. In its widest sense, it signifies the pious, who in this world strictly obey the commands of God, or enjoy, in the eternal world, that bliss which is the reward of such a life on earth.—The doctrine of saints, and the ideas and usages which grew out of it, form one of the main points of difference between the Protestants and Roman Catholics. In all probability, the veneration paid to saints, relics, &c. originated from the virtues displayed by the early Christian martyrs; and it is also very natural to suppose, that in ages when information was transmitted chiefly by tradition, facts easily became exaggerated, without intentional violation of the truth; and many miracles were, accordingly, reported to have been wrought by their relics or intercession.

SAL'AMANDER, in zoology, an animal of the genus *Lacerta*, a species of lizard of deep black and orange colours, and perfectly harmless. This animal is oviparous, inhabits cold damp places among trees or hedges, avoiding the heat of the sun; yet ignorance and superstition have ascribed to it the power of resisting fire.

SAL AMMO'NIAC, in chemistry, a saline concrete or salt, which was said to be dug out of the sands of Ammonia in Egypt, or there manufactured, and from which it took its name. There is no native salt of this name known to the moderns, but a factitious salt composed of a volatile alkali and the acid of sea salt, whence it is called the muriate of ammonia. In Egypt it is made in great quantities from the soot of camel's dung, which is burnt in Cairo instead of wood; and in every part of Egypt, but especially in the Delta, peasants are seen driving asses loaded with bags of that soot, on their way to the sal ammoniac works. Various animal offals develop, during their spontaneous putrefactive fermentation, or their decomposition by heat, a large quantity of free or carbonated ammonia among their volatile products; and upon this principle many sal ammoniac works have been established. The best white sal ammoniac is in semi-transparent spheroidal cakes, each weighing about a quarter of a cwt. It is principally used in tinning of cast iron, wrought iron, copper, brass, and for making the various ammoniacal preparations of pharmacy.

SAL'ARY, the stipend or remuneration made to a man for his services—usually a fixed annual sum; in distinction from *wages*, which is for day labour; and *pay*, which is for military service.

SAL'EP, or SALOOP', in the materia medica, the dried root of a species of *orchis*; also, a preparation of this root to be used as food. That which is imported from India is in white oval pieces, hard, clear, and pellucid, and without smell: as an article of diet, it is said to be light and nutritious.

SAL'IC, or SAL'IQUE LAW, an ancient and fundamental law of France, usually supposed to have been made by Pharamond, or at least by Clovis, by virtue of which males only can inherit the throne. Though, by this law, the crown of France is prevented from being worn by a woman, the provision was a general one, without particular regard to the royal family; as the crown of England descends to the eldest son, by the *general* right of primogeniture. —The *Salic Franks*, from whom this term was derived, settled in Gaul in the reign of Julian, who is said to have given them lands on condition of their personal service in war.—The historian Millot observes, there is no ground for believing that the Salic law expressly settled the right of succession to the crown; it only says that, with relation to the Salic land, women have no share of heritage without restricting it to the royal family; for all those Salic lands which were held by right of conquest.

SAL'ICINE, in chemistry, a febrifuge substance obtained from the bark of the white willow *(Salix alba)*, as also of the aspen-tree, some other willows, and some poplars.

SALICOR'NIA, in botany, a genus of plants, class 1 *Monandria*, order 1 *Monogynia*.

SA'LIENT, in heraldry, an epithet applied to a lion or other beast, represented in a leaping posture, with his right foot in the dexter point, and his hinder left foot in the sinister base of the escutcheon, by which it is distinguished from *rampant*. ——*Counter-salient* is when two beasts on the same escutcheon are salient, the one leaping one way, and the other in an opposite direction, so that their bodies cross.

SALIFI'ABLE BASES, in chemistry, substances which, when combined with acids, form salts.

SAL'IFY, in chemistry, to form into a neutral salt, by combining an acid with an alkali, earth, or metal.

SALI'VA, the fluid secreted by certain glands, by which the food is moistened before it is conveyed into the stomach. Those glands which secrete the saliva are termed *salival glands*.

SALIVATION, in medicine, the act or process of producing an increased secretion of saliva, for the cure of disease, by mercurial preparations.

SA'LIX, in botany, a genus of plants, class 22 *Dioecia*, order 2 *Diandria*. All the species of *Salix* are trees, very hardy, remarkably fast growers, and several of them attaining a considerable height when permitted to run up to standards. They are usually of the aquatic kind, being generally the most abundant and of most prosperous growth in watery situations.

LIQUID AMMONIA SHOULD BE KEPT IN WELL-STOPPED BOTTLES, BECAUSE WHEN IT IS EXPOSED TO THE AIR IT ABSORBS CARBONIC ACID.

ST. DENIS IS THE PATRON OF FRANCE; ST. GEORGE, OF ENGLAND AND RUSSIA; ST. PATRICK, OF IRELAND; AND ST. ANDREW, OF SCOTLAND.



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SAL'LY, in the military art, the issuing out of the besieged from a town or fort, and falling upon the besiegers in their works, in order to cut them off, or harass and exhaust them.—"To cut off a *sally*," is to get between those that made the sally and their town.

SAL'LY-PORT, in fortification, a postern gate, or a passage under ground from the inner to the outer works, such as from the higher flank to the lower, or to the communication from the middle of the curtain to the ravelin.—*Sally-ports* are also doorways on each quarter of a fire-ship, out of which the men make their escape into the boats as soon as the train is fired.

SALMON (pron. *sam'mon*), in ichthyology, a fish of the genus *Salmo*, found in all the northern climates of Europe, Asia, and America, ascending the rivers for spawning in spring, and penetrating to their head streams. It is a remarkably strong fish, and will even leap over considerable falls which lie in the way of its progress. It generally runs from about 12 to 24 pounds in weight, but sometimes salmon are taken weighing from 50 to 60 lbs. It furnishes a delicious dish for the table, and is an article of commerce. The process of spawning frequently occupies more than a week; during which the eggs deposited by a single fish sometimes amount to 20,000. The spawning season extends from the end of October to the beginning of February, and, according to very satisfactory evidence, it occurs about the same time throughout all the rivers of the United Kingdom. The eggs of the salmon remain in the gravel for several months, exposed to the influence of running water. In the course of the month of March the fry are evolved. When newly hatched, they are scarcely an inch in length, of the most delicate structure, and for a while connected with the egg. Upon leaving the spawning bed, the fry betake themselves to the neighbouring pools, where they speedily increase to two or three inches in length. In April, May, and June, they migrate towards the sea, keeping near the margin, or still water, in the river; and when they reach the estuary, they betake themselves to a deeper and more sheltered course, and escape to the unknown haunts of their race, to return shortly after as *grilses*, along with the more aged individuals. All these seaward migrations of the parent fish and the fry are influenced, and greatly accelerated, by the occurrence of the floods in the rivers.—The London market, where the consumption is immense, is principally supplied from the Scotch rivers. The Tweed fishery is the first in point of magnitude of any in the kingdom; and such is the abundance, that several hundreds have been frequently taken by a single sweep of the net. When the season is at its height, and the catch greater than can be taken off fresh, it is salted, dried, or pickled, for winter consumption at home. [See FISHERIES.]

SALOON', in architecture, a lofty spacious hall, vaulted at the top, and usually comprehending two stories, with two ranges of windows. In Italy, it is used as a state room in palaces for the reception of ambassadors and other visitors.

SAL'PA, in entomology, a genus of animals, class *Vermes*, order *Mollusca*, having the body tubular, loose, and gelatinous; intestines placed obliquely. They are gregarious, swim with great facility, and have the power of contracting or opening at pleasure the cavities of the extremities.

SALSO'LA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. Plants of this genus derive their name from their salt quality, and are well known for producing the alkaline salt commonly called barilla, soda, or kelp.

SALT, in the popular sense, is a saline crystalization, used to season or preserve meats. This is usually called common salt. Salt is either procured by evaporating seawater, or the water of salt springs; or dug in mines. White salt and bay salt are of the former kind; and fossil or rock salt of the latter. In sea salt prepared by rapid evaporation, the insoluble portion is a mixture of carbonate of lime with carbonate of magnesia, and a fine silicecous sand; and, in the salt prepared from Cheshire brine, is almost entirely carbonate of lime. The insoluble part of the less pure pieces of rock salt is chiefly of a marly earth, with some sulphate of lime. Some estimate of the general proportion of this impurity may be formed from the fact that government, in levying the duties, allowed 65 pounds to the bushel of rock salt, instead of 56 pounds, the usual weight of a bushel of salt. In Caramania, in Asia, Chardin tells us, rock salt is so abundant, and the atmosphere so dry, that the inhabitants use it as stone for building their houses. This mineral is also found on the whole elevated table land of Great Tartary, Thibet, and Hindostan. Extensive plains in Persia are covered with a saline efflorescence; and, referring to the account of travellers, the island of Ormus, in the Persian gulf, is one large mass of rock salt. According to Hornemann, there is a mass of rock salt spread over the mountains that bound the desert of Lybia to the north, so vast that no eye can reach its termination in one direction, and its breadth he computed to be several miles. Rock salt has also been found in New South Wales. The principal deposit in Great Britain is in Cheshire. The beds alternate with clay and marl, which contain gypsum. It occurs also at Droitwich in Worcestershire. The salt mines in the neighbourhood of Northwich are very extensive. They have been wrought since 1670; and the quantity of salt obtained from them is greater, probably, than is obtained from any other salt mines in the world: but the Cheshire salt, in its solid form when dug from the mine, is not sufficiently pure for use. To purify it, it is dissolved in sea water, from which it is afterwards separated by evaporation and crystalization. The beds or masses of rock salt are occasionally so thick, that they have not been



MAY SALT BE SO CALLED, BECAUSE IT IS FORMED BY THE EVAPORATION OF SEA-WATER IN ARTIFICIAL BAYS, OR SALT-PANS, ON THE COAST.

CONSIDERABLE HEAT IS WHEN SEVERE FROST PRODUCE COLD MUCH GREATER THAN OF THE ORDINARY ICE.

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yet bored through, though mined for many centuries; but it is sometimes disseminated in small masses or little veins among the calcareous and argillaceous marls which accompany or overlie the greater deposit. In the places where there are salt springs, and salt works are carried on at them, the work-house where the salt is made is always called the *wych-house*, and hence it is supposed that *wych* was an old British word for salt, as all the towns in which salt is made end in *wych*; as *Namptwych*, *Droitwych*, *Middlewych*, &c.—There are places in America where the sea occasionally overflows, which, on the water's evaporating, leaves the salt. These are called *licks*, and are the resort of vast crowds of different quadrupeds.

SALTS, or SALINE SUBSTANCES, with respect to their chemical properties, are divided into two classes; into acid salts or acids, and into alkaline salts or alkalies; and from the mutual combination of these two arises a third class, viz. that of neutral salts.——*Acid salts* are distinguished by their sour taste when diluted with water. *Alkaline salts* possess a urinous, burning, and caustic taste, turn the syrup of violets to a green, have a strong affinity for acids, combine with oils and fat, and unite readily with water. *Neutral salts* are so called because they are neither acid nor alkaline; such as Epsom salts, nitre, &c.: but in many secondary salts the qualities of one ingredient predominate.

SALT'IER, in heraldry, one of the eight greater ordinaries; a St. Andrew's cross.

SALTPE'TRE. [See NITRE.]

SALU'TE, in military discipline, a testimony or act of respect performed in different ways, according to circumstances. In the army, the officers salute by dropping the point of the sword; also by lowering the colours and beating the drums. In the navy, salutes are made by discharges of cannon, striking the colours or top-sails, or by volleys of small-arms. Ships always salute with an odd number of guns; and galleys with an even number. The vessel under the wind of the other fires first.

SAL'VAGE, in commerce, a recompense allowed to such persons as have assisted in saving goods from loss at sea, or ships from shipwrecks, &c.

SALVATEL'LA, in anatomy, the vein which runs along the arm, and terminates in the little finger; so named from *salus*, health, because the opening of it was formerly thought to be of singular use in hypochondriacal affections.

SAMARI'TAN, an inhabitant of Samaria, or one that belonged to the sect which derived their appellation from that city. After the fall of the kingdom of Israel, the people remaining in its territory, (consisting of the tribes of Ephraim and Manasseh, mingled with some Assyrian colonists), were called Samaritans by the Greeks, from the city of Samaria, around which they dwelt. When the Jews, on their return from captivity, rebuilt the temple of Jerusalem, the Samaritans desired to aid in the work; but their offers were rejected by the Jews, who looked upon them as unclean, on account of their mixture with heathens; and the Samaritans revenged themselves by hindering the building of the city and temple. Hence the hatred which prevailed between the Jews and Samaritans, which, in the time of Jesus, when the latter were confined to a narrow strip of country between Judea and Galilee, prevented all intercourse between them, and still continues. In their religious opinions and usages they resemble those Jews who reject the Talmud, and differ from the rabbinical Jews, in receiving only the Pentateuch and book of Joshua, and in rejecting all the other portions of the Bible, as well as the Talmud and rabbinical traditions: but in their manners, rites, and religious ceremonies, they adhere strictly to the Mosaic law.

SA'MIAN EARTH (from the isle of *Samos*), the name of a species of marl, used in medicine as an astringent.

SA'MIEL, the Arabian name for a hot suffocating wind peculiar to the desert of Arabia. It blows over the deserts in the month of July and August: it approaches the very gates of Bagdat, but is said never to affect a person within its walls. It frequently passes with the velocity of lightning, and there is no way of avoiding its dire effects, but by falling on the ground, and keeping the face close to the earth. Those who are negligent of this precaution experience instant suffocation. [See SIMOON.]

SA'MIUS LA'PIS, or SAMIAN STONE, in mineralogy, a stone brought from the island of Samos, and used by goldsmiths in brightening and polishing gold.

SAMNI'TES, in antiquity, a sort of gladiators who derived their name from their armour. They are mentioned by Cicero and others.

SAM'PHIRE, a plant of the genus *Crithmum*. It grows on rocks near the sea shore, where it is washed by the salt water. It is used for pickling.

SAM'UEL, *The Books of*, two canonical books of the Old Testament, so called, as being usually ascribed to the prophet Samuel. The books of Samuel, and the books of Kings, are a continued history of the reigns of the kings of Israel and Judah.—The first book of Samuel comprehends the transactions under the government of Eli and Samuel, and under Saul the first king; and also the acts of David while he lived under Saul. The second book is wholly occupied in relating the transactions of David's reign.

SAN-BENI'TO, a kind of linen garment, painted with hideous figures, and worn by persons condemned by the Inquisition. Also a coat of sackcloth used by penitents on their reconciliation to the church.

SANCTIFICA'TION, in an evangelical sense, the act of God's grace by which the affections of men are purified or alienated from sin and the world, and exalted to a supreme love of God.

SANC'TUARY, in a general sense, any sacred asylum; but more especially signify-



SALT MADE PART OF THE PAY OF THE ROMAN SOLDIERS, WHICH WAS CALLED SALARIUM; HENCE OUR WORD SALARY.

THE CONSUMPTION OF SALTPETRE DURING THE TIME OF WAR IS VERY GREAT, AS IT FORMS THE PRINCIPAL INGREDIENT OF GUNPOWDER.

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DESERTS OF SAND EXTEND FROM THE ATLANTIC ACROSS AFRICA INTO ARABIA AND PERSIA, AND ARE FROM ONE TO FOUR HUNDRED MILES BROAD.

ing THE SANCTUM-SANCTORUM, the most retired part of the temple at Jerusalem, called also the *Holy of Holies*, in which was kept the ark of the covenant, and into which no person was permitted to enter except the high-priest, and that only once a year, to intercede for the people.

SAND, any mass or collection of fine particles of stone, particularly of the siliceous kind, but not strictly reduced to powder or dust. Sand is of great use in the glass manufacture; the white writing sand being employed for making the white glass, and a coarse greenish looking sand for the green glass. In agriculture it seems to be the office of sand to make unctuous earths fertile, and fit to support vegetables, &c.; for earth alone, we find, is liable to coalesce, and gather into a hard coherent mass, as appears in clay.——*Sands*, in the plural, tracts of land consisting of sand, like the deserts of Arabia and Africa.

SAN'DAL, in antiquity, a kind of costly slipper, worn by the Greek and Roman ladies, made of silk or other precious stuffs, and ornamented with gold or silver.

SAN'DAL-WOOD, or SAN'DERS-WOOD, a kind of wood which grows in the East Indies, and is of three kinds, the white, the yellow, and the red. The tree which produces the two former is of the genus *Santalum*. Its wood has a bitter taste and an aromatic smell. The oriental nations burn it in their houses for the sake of its fragrant odour, and with the powder of it a paste is prepared, with which they anoint their bodies. The white is the wood next to the bark; the yellow is the inner part of the tree. The red sandal-wood is obtained from a different tree, the *Pterocarpus santolinus*: it is of a dull red colour, has little taste or smell, and is principally used as a colouring drug.

SAN'DARACH, or GUM SAN'DARACH, a resinous substance exuding from a tree that grows in Barbary, and also from the juniper tree. It is used in powder to prevent ink from sinking or spreading.

SAND'BAGS, bags fitted for holding sand or earth, and used in repairing breaches in fortifications, &c.

SAND'-BOX, in botany, a tree or plant of the genus *Hura*. It is said that the pericarp of the fruit will burst in the heat of the day with a loud report, and throw the seeds to a distance.

SAND'-EEL, in ichthyology, the ammodyte, a fish resembling an eel, but seldom exceeding a foot in length. Its head is compressed, and the body cylindrical, with scales hardly perceptible. It coils with its head in the centre, and penetrates into the sand; whence its name.

SAN'DEVER, or SAN'DIVER, a whitish salt which is cast up from the materials of glass in fusion, and, floating on the top, is skimmed off. A similar substance is thrown out in eruptions of volcanoes. It is used in the fusion of certain ores, and is also employed in medicine.

SAND'PIPER, in ornithology, a bird of the genus *Tringa*.

SAND'STONE, in mineralogy, masses of stone composed chiefly of quartz united by a cement, calcareous, marly, or siliceous. Sandstones usually consist of the materials of older rocks, as granite, broken up and comminuted, and afterwards deposited again.

SANG FROID [Fr. *cold blood*], freedom from agitation or excitement of mind.

SAN'GIAC, the title of a provincial governor in Turkey, next in authority to a bey or viceroy.

SAN'GUINE, in heraldry, an epithet for the dark red colour, represented in engraving by lines hatched across one another diagonally.

SAN'HEDRIM, a word said to be derived from the Greek, and signifying the great public council, civil and religious, of the ancient Jewish republic or hierarchy. This council consisted of seventy elders, who received appeals from other tribunals, and had power of life and death.

SANIDIUM, a genus of fossils of the class of *ostenites*, composed of plain flat plates.

SA'NIES, in medicine, a thin acrid discharge of serous matter from wounds or sores.

SAN'SCRIT, the ancient language of Hindostan, from which are formed all the modern languages or dialects of India. In it are written the ancient books of the country, but it is now considered obsolete.

SANS-CULOTTES [Fr. from *sans*, without, and *culottes*, breeches], the name given in derision to the popular party, by the aristocratical, in the beginning of the French revolution of 1789; but though in the first instance applied by way of contempt, yet when the fiercest principles of republicanism prevailed, *sans-culottism* became a term of honour; and some of their bravest generals in their dispatches announcing their victories, gloried in the name.

SAN'TALUM, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*. The single species is the white and yellow sandal-wood.

SANTOLI'NA, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*. The species are shrubs, as the *Absinthium*, or common lavender cotton, &c.

SAP, the juice of plants, which flows chiefly between the wood and the bark. This nutritive substance is collected by the roots with those fibres which form their terminations, and which branch out in every direction, and appear to seek those substances in the soil best qualified to supply the nourishment which it is their province to convey. The juice, or sap, thus extracted from the soil, is drawn up the tree by the efforts of vegetation, each branch and each leaf serving, by its demand for nourishment, as a kind of forcing-pump, to suck the juice up to the topmost shoot, to extend it to all the branches, and, in a healthy tree, to the extremity of each shoot. The roots, in other words, may be considered as the providers of the aliment;

SANDAL-WOOD GROWS PRINCIPALLY IN MALABAR, IN THE MOUNTAINOUS COUNTRY AT A LITTLE DISTANCE FROM THE SEA COAST.



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while the branches, shoots, and leaves may be fairly described as the appetite of the tree, which causes it to consume the food thus supplied to it.

SAPA'JO, in zoology, a division of the genus *Simia*, including such of the monkeys as have prehensile tails.

SAPIENTIÆ DENTES, or WISDOM TEETH, in anatomy, the two last or inmost of the *dentes molares* of the upper jaw, one on each side; so called because they appear when persons are supposed to be at years of discretion.

SAPONA'RIA, in botany, the *soap-wort*, of which there are nine species. The *Saponaria officinalis* is a British plant, and has a creeping root, so that in a short time it would fill a very large space of ground. A decoction of this plant is used to cleanse and scour woollen cloths: the poorer people in some countries use it instead of soap for washing.

SAPPHIC (pron. *saf'ic*), pertaining to Sappho, a Grecian poetess; as *Sapphic* odes, &c. The Sapphic verse consists of eleven syllables in five feet, of which the first, fourth, and fifth, are trochees, the second a spondee, and the third a dactyl, in the first three lines, of each stanza, with a fourth consisting only of a dactyl and a spondee.

SAP'PHIRE, a precious stone of a fine blue colour. In hardness it is only inferior to the diamond; and the sapphire which is found in the same mines with the ruby, is nearly allied to that gem. They are found in various places; as Pegu, Calicut, Cananor, and Ceylon, in Asia; and Bohemia and Silesia, in Europe. The most highly prized varieties are the crimson and carmine red; these are the oriental ruby of the jeweller: the next is sapphire; and the last is sapphire, or oriental topaz. The asterias, or star-stone, is a very beautiful variety, in which the colour is generally of a reddish violet, with an opalescent lustre.

SAP'PING, in sieges, &c., the act of working underground to gain the descent of a ditch, counterscarp, &c.

SAR'ABAND, a dance and a tune used in Spain, said to be derived from the Saracens.

SAR'COCOL, or SARCOCOLLA, a gum resin brought from Persia and Arabia in small grains of a light yellow or red colour, and supposed to be the product of a tree called by botanists the *penæa sarcocolla*.

SAR'COLITE, a substance of a vitreous nature, and of a rose-flesh colour, found near Vesuvius.

SARCOL'OGY, that part of anatomy which treats of the soft parts of the body, as the muscles, fat, intestines, vessels, &c.

SARCO'MA, any fleshy excrescence on an animal body.

SARCOPH'AGUS, a species of lime-stone of which ancient coffins were made, and which, according to Pliny, had the power of destroying within forty days the corpses put into them. This quality brought the stone into use for coffins, and thus the name came to be applied to all coffins of stone, though often used for a contrary purpose to that which the name expresses. Of the great number of *sarcophagi* which have come down to us, several are known by particular names; as, the sarcophagus of Homer, in the Besborodko gardens at St. Petersburg; and that of Alexander the Great, in the British Museum, once in the mosque of St. Athanasius at Alexandria. It was taken by the British from the French, during their memorable campaign in Egypt.

SARDON'IC LAUGH (*risus sardonicus*), so called from the herb *sardonia*, which being eaten is said to cause a deadly convulsive laughter, or spasmodic grin.

SAR'DONYX, a genus of semi-pellucid gems, of the onyx structure, zoned or tabulated, and composed of the matter of the onyx variegated with that of the red or yellow carnelian.

SAR'GUS, in ichthyology, a fish of the Mediterranean, whose body is variegated with brown transverse rings.

SARMEN'TOUS, in botany, an epithet for a stem that is filiform and almost naked, or having only leaves in branches at the joints or knots, where it strikes root.

SARMENTO'SÆ, in botany, one of Linnæus's natural orders, consisting of plants which have climbing stems and branches, like the vine.

SARSAPARIL'LA, in botany, a plant growing in S. America and the W. Indies; a species of *Smilax*, valued in medicine for its mucilaginous and demulcent qualities.

SAS'SAFRAS, in botany, a tree of the genus *Laurus*, whose bark has an aromatic smell and taste, and is used in medicine.

SAS'SOLINE, in chemistry, native boracic acid, found in saline incrustations on the borders of hot springs near Sasso, in the territory of Florence.

SAS'TRA, among the Hindoos, a book containing sacred ordinances. The six great *Sastras*, in the opinion of the Hindoos, contain all knowledge, human and divine. These are called the Veda, Upaveda, Vedanga, Purana, Dherma, and Dersana.

SAT'ELLITE, in astronomy, a small planet revolving round another. [See ASTRONOMY, PLANET, &c.]

SAT'IN, a soft, closely-woven silk, with a glossy surface. In the manufacture of other silken stuffs, each half of the warp is raised alternately; but in weaving satin, the workman only raises the fifth or the eighth part of the warp; in which way it acquires that lustre and brilliancy which distinguish it from most other kinds of silks. Satin has become of late an article of considerable use for hats. The chief seats of the satin manufacture are Lyons in France, and Genoa and Florence in Italy.

SAT'IRE, in literature, a species of writing, generally poetical, the object of which is always castigation. It presupposes not merely much natural wit, but also acute observation, and much variety of life and manners to call this wit into exercise.

SATURATION, in chemistry, expresses that point at which a body ceases to have the power of dissolving another; thus when





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nitric acid has dissolved lime to its fullest extent, it is said to be saturated with lime.

SAT'URDAY, the last day of the week. The Scandinavians, and from them the Saxons, had a deity named *Seater*, from whom the English name of the *dies Saturnii* of the Romans may be derived; but the subject is by no means clear.

SATURE'IA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. Plants of this genus are garden herbs, well known by the name of savory.

SA'TURN, in astronomy, a very conspicuous planet, though not so brilliant as Jupiter, Venus, or even Mars. Its diameter is nearly 80,000 miles, its distance from the sun 903 millions of miles, and its periodical revolution round that luminary is performed in little less than 30 of our years. Saturn is supposed to have a rotation about its axis in little more than 12 hours; and it is encompassed with two broad rings, which are probably of considerable importance in reflecting the light of the sun to the planet.

SATURNA'LIA, in antiquity, feasts in honour of Saturn. The Saturnalia had their origin in Greece, but by whom they were instituted or introduced among the Romans is not known; but they were celebrated with such circumstances as were thought characteristic of the golden age; particularly the overthrow of distinction and rank. Slaves were reputed masters during the three days of this festivity; were at liberty to say what they pleased; and, in fine, were served at table by their owners. These festivities, in which men indulged in riot without restraint, were held annually about the middle of December.

SATURNITE, a metallic substance of recent discovery, separated from lead in torrefaction, resembling lead in its colour, weight, solubility in acids, &c., but more fusible and brittle.

SA'TYR, a sylvan deity or demi-god, represented as a monster, half man and half goat, having horns on his head, a hairy body, with the feet and tail of a goat. Satyrs are usually found in the train of Bacchus, and have been distinguished for lasciviousness and riot.

SAU'CISSE, in the art of war, a long pipe or bag, made of cloth well pitched, or of leather, filled with powder, and extending from the chamber of the mine to the entrance of the gallery. It serves to communicate fire to mines, caissons, bomb-chests, &c.

SAUCISSON'S, in fortification, faggots or fascines, made of great boughs of trees bound together; their use being to cover men, or to make epaulements, &c.

SAU'RIAN, an epithet designating an order of reptiles; pertaining to the lizard species.

SAUS'URITE, a mineral approaching *andalusite*, of a whitish gray or green colour; named from Saussure, the discoverer.

SAUTEREAU' [Fr.], in mechanics, a term for a small piece of loose wood in a mortoise, which causes certain instruments to go off by means of a feather that is placed in its tongue or languet.

SAUTERELLE [Fr.], in mechanics, a term for an instrument used by stone-cutters and carpenters to trace and form angles.

SAVAN'NA, or SAVAN'NAH, an extensive open plain, destitute of trees.

SAX'IFRAGE, in botany, a genus of plants of many species. Also, a medicine that has the reputation of being a solvent for the stone.

SCA'BIES, in medicine, a disease of the skin, accompanied by itching, caused by insects breeding in the parts affected.

SCABIO'SA, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*. Plants of this genus are mostly perennials, as the Alpine scabious, &c.

SCAB'RIDÆ, the 53d Linnæan natural order of plants, with rough leaves; as the fig, hemp, &c.

SCAGLIO'LA, or SCALIO'LA, a mixture of fine gypsum and powdered selenite, made into a paste with glue, and serving to form paintings of a stony hardness. The process is as follows:—Upon a tablet of white stucco (consisting of this gypsum paste), the outlines of the work designed are traced with a sharp instrument, and the cavities thus made are filled up with successive layers of paste, of the same composition, but coloured. It takes a very high polish, and, when executed by a skilful workman, is an admirable imitation of marble.

SCALD, among the ancient Scandinavians, a poet; one whose occupation was to compose poems in honour of distinguished men and their achievements, and to recite and sing them on public occasions.

SCALE, a most useful mathematical instrument, made of any hard material. The principal divisions are half an inch, and the horizontal lines divide it into ten parts, or the 20th of an inch; while by sloping the lines in the left-hand division, the tenths are divided into tenths of tenths, or 100ths of the half inch, by progressively ascending or descending.——*Scale*, in music, a series of sounds rising or falling towards acuteness or gravity.——In geography, a *scale of miles* on a map, for measuring the distances of places.——In arithmetic, *scale of notation*, the order of progression on which any system of arithmetic is founded, as the decennary scale, which computes by tens.——*Scales*, receptacles at the end of two equal levers, to determine the weight of bodies by standard bodies of stamped metal, in pounds, ounces, &c.——Also, alternate layers, as the *scales* of fish, serpents, &c.

SCA'LE-STONE, or SCHAAL'STEIN, a rare mineral, of a grayish or pearly white colour, tinged with green, yellow, or red. It is also called *tafelspath* and *tabular spar*; and is composed of thin laminæ collected into large prismatic concretions.

SCAL'LOP, in ichthyology, a genus of shell-fish called *pecten*. The shell is bi-



DURING THE ROMAN SATURNALIA, JESTS AND FREEDOM EVERYWHERE PREVAILED, AND ALL CHASED FROM THEIR USUAL OCCUPATIONS.

THE SATURNIAN PERIOD, OR REIGN OF SATURN, WAS THE GOLDEN AGE, WHICH POETS VIED WITH EACH OTHER IN CELEBRATING.

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nial of the divine origin of the Christian religion, or of the being, perfections, or truth of God. [See PHILOSOPHY.]

SCEPTRE, a short staff, the emblem of sovereign power. It is an ensign of royalty of greater antiquity than the crown. It was at first an unornamented staff, or baton, but afterwards became covered with ornaments in ivory, gold, &c. At the present time the sceptre and ball form the two most important emblems of royal and imperial power.

SCHED'ULE, in law, a scroll of paper or parchment appended to a will or any other deed. Also an inventory of goods, &c.

SCHE'LIUM, or SCHEE'LIN, in mineralogy, names by which *tungsten* is sometimes called. It is a hard brittle metal of a grayish white colour, and brilliant.

SCHENE, in antiquity, an Egyptian measure of length, equal to sixty stadia, or about seven miles and a half.

SCHERO'MA, in medicine, a dryness of the eye from the want of the lachrymal fluid.

SCHE'SIS, in medicine, an appellation designating the general state or disposition of the body or mind.——In rhetoric, a figure of speech whereby a certain affection or inclination of the adversary is feigned on purpose to be answered.

SCHIL'LER-SPAR, a mineral containing two sub-species, bronzite and common schiller-spar. It frequently occurs intermingled with serpentine, and when exposed to a high degree of heat, it becomes hard, and forms a porcelain-like mass.

SCHISM, in a theological sense, a division or separation in a church or denomination of Christians; or breach of unity among people of the same religious persuasion. Hence, one who separates from an established church or religious faith is termed a *schismatic*.——In scripture, the word *schism* seems to denote a breach of charity, rather than a difference of doctrine.

SCHIST, or SHISTUS, a name given to different kinds of stones, but particularly those of the argillaceous kind.

SCHOLASTICS, a class of philosophers or *schoolmen*, who arose in the middle ages, and taught a peculiar kind of philosophy, which consisted in applying the ancient dialectics to theology, and intimately uniting both. On account of the excessive subtilty which prevailed in the scholastic philosophy, the expression *scholastic* has been used for the extreme of *subtilty*. After the Reformation and the revival of letters, the system gradually declined, till it gave place to the enlightened philosophy of lord Bacon and the great men who have followed in his track and carried out his principles.

SCHO'LIA, notes or annotations on an ancient author.——*Scholiast*, one who writes *scholia*, for the purpose of illustrating ancient authors.

SCHOOL, a house or place of rendezvous for pupils or students to receive instruction in various arts and branches of useful and necessary knowledge. In modern usage, the word *school* comprehends every place of education, whether a college, an academy, a primary school, or a school for learning any single art or accomplishment. "The changes which have taken place in science, and in the whole condition of modern nations, who are no longer dependent, like those of the middle ages, for their means of intellectual culture, on the remains of ancient civilization, necessarily make the character of school instruction very different from what it was formerly, when the whole intellectual wealth of Europe was contained in two languages; and though these noble idioms will always retain a high place in a complete system of education, yet their importance is comparatively less, while that of the natural sciences, history, geography, politics, &c. has very much increased. All this has had a great influence upon schools, and will have a still greater. The importance of education, moreover, is now set in strong relief by the general conviction, entertained in free countries, that the general diffusion of knowledge is the only true security for well-regulated liberty, which must rest on a just sense of what is due from man to man; and few results can be attained by the student of history and of mankind more delightful than this of the essential connexion of light and liberty; not that great learning necessarily leads to liberty; history affords many instances which disprove this; but that a general diffusion of knowledge always tends to promote a general sense and love of what is right and just, as well as to furnish the means of securing it." For the foregoing remarks, which are not less forcible than apparent, we are indebted to Blackie's edition of the Conversations Lexicon.——*School*, among painters, the style and manner of painting among the great masters of the art at any particular period, as the Italian, Flemish, Dutch, Spanish, and English schools.——*School*, in philosophy, a system of doctrine as delivered by particular teachers, as the *Platonic school*, the *school of Aristotle*, &c.——Also, the seminaries for teaching logic, metaphysics, and theology, which were formed in the middle ages, and which were characterized by academical disputations and subtilties of reasoning. Hence *school divinity* is the phrase used to denote that theology which discusses nice points, and proves everything by argument.

SCHOON'ER, a vessel with two masts, whose main-sail and fore-sail are suspended by gaffs, like a sloop's main-sail, and are stretched below by booms.

SCIAG'RAPHY, in architecture, a profile or section of a building to exhibit its interior structure.——In astronomy, the art of finding the hour of the day or night by the shadows of objects, caused by the sun, moon, or stars.

SCIATIC *Artery*, in anatomy, a branch of the internal iliac.——*Sciatic Nerve*, a branch of a nerve of the lower extremity, formed by the union of the lumbar and sacral nerves.——*Sciatic Vein*, the vein which accompanies the sciatic artery in the thigh.



WESTMINSTER SCHOOL, WITH FORTY SCHOLARSHIPS, WAS FOUNDED BY ELIZABETH, IN 1560; AND HARROW SCHOOL ALSO IN HER REIGN.

THE EDUCATION OF THE PEOPLE HAS BEEN GREATLY PROMOTED BY THE ESTABLISHMENT OF SCHOOLS, THE NEW UNIVERSITIES, AND THE MIDDLE AGES IN HER REIGN.

LITERARY AND SCIENTIFIC INSTITUTIONS DISSEMINATE A VAST FUND OF KNOWLEDGE OF THE MOST INTERESTING DESCRIPTION.

SCI'ENCE, the regular development of any branch of knowledge. It perfects genius, and moderates those ebullitions of the fancy which are apt to overstep the bounds of reason. The difference between science and art is, that the first is speculative, and the second mechanical. Science plans, and art performs; for instance, the *theory* of music is a *science*; the *practice* of it an *art*. Science gives data; philosophy draws conclusions.——*Pure* science, as the *mathematics*, is built on self-evident truths; but the term science is also applied to other subjects founded on generally acknowledged truths, as *metaphysics*; or on experiment and observation, as *chemistry* and *natural philosophy*; or even to an assemblage of the general principles of an art, as the science of *agriculture*.——The chief object of science is the discovery of truth, and of art the development of beauty. In the former we trust to reason, and in the latter to imagination. But judgment and fancy are of mutual assistance in both studies. Science clears the obstructions which impede the progress of art, and art adorns and smooths the path of science. No discovery is made without some previous conjectural effort of the mind, some exertion of the imagination; nor is any beauty unfolded where there has not been some pre-consideration of probable effects, some exertion of the reasoning faculties. As the human mind is pleased with the contemplation of what is true, and delighted with the appearance of what is beautiful, it may be assumed that the cultivation of science, and the improvement of art, originated in our love of pleasure. We commonly divide the objects of the two pursuits into distinct classes; and we think, when we call scientific studies useful, and the productions of art only ornamental, that there is something intrinsically different in their respective natures. But if we examine our own feelings, and judge of science by its influence on ourselves, we shall be obliged to confess, that although less obviously, it is, in fact, as much recommended to us by the pleasures to which it ministers, as those arts that we regard as entirely devoted to the excitement of agreeable emotions.

SCIL'LA, in botany, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. Plants of this genus are bulbous, and consist of the different varieties of the squill.

SCI'ON, or CI'ON, a graft or young shoot of a tree.

SCIOP'TICS, the science of exhibiting images of external objects received through a double convex glass into a darkened room. ——*Scioptic*, a sphere or globe of wood with a hole in which is placed a lens, so constructed that it may be turned round every way, and used in making experiments with the camera obscura.

SCI'RE FA'CIAS, in law, a judicial writ summoning a person to show cause to the court why something should not be done; as, to require sureties to show cause why the plaintiff should not have execution against them for debt and damages, or to require a third person to show cause why goods in his hands by replevin, should not be delivered to satisfy the execution, &c.

SCITAMIN'EÆ, the eighth Linnæan natural order of plants, including turmeric, ginger, cardamoms, and other aromatics.

SCIU'RUS, in zoology, a genus of animals, class *Mammalia*, order *Glires*. The species consist of the various kinds of squirrel.

SCLAVO'NIAN, or SCLAVON'IC, pertaining to the *Sclavi*, or their language—a people that anciently inhabited the country between the rivers Save and Drave. Hence the word came to denote the language which is now spoken in Poland, Hungary, Bohemia, &c.

SCLEROT'ICA, in anatomy, one of the tunics or coats of the eye: it is hard, opaque, and extended from the cornea to the optic nerve; its anterior part, which is transparent, is called the cornea.——Medicines which harden and consolidate the parts to which they are applied are termed *sclerotics*.

SCO'LEX, in entomology, a genus of animals, class *Vermes*, order *Intestina*, having the body gelatinous and variously shaped; the head prehensile and retractile.

SCO'LOPAX, in ornithology, a genus of birds of the order *Grallæ*. The species include the woodcock, snipe, curlew, &c.

SCOLOPEN'DRA, in entomology, a genus of insects of the order *Aptera*, destitute of wings, but having as many feet on each side as there are segments in the body.

SCOM'BER, in ichthyology, the mackerel [which see].

SCORE, in music, the original draught of the whole composition, wherein the several parts are distinctly scored and marked.

SCO'RIA, in metallurgy, the dross or recrements of metals in fusion; or, more strictly speaking, that vitreous mass which is produced in melting metals and ores, and which when cold is brittle, and not dissoluble in water. Hence, *scoriaceous*, pertaining to dross; and *scorification*, the operation of reducing a body into scoria.

SCORPÆ'NA, in ichthyology, a genus of fishes of the thoracic order. They inhabit the Mediterranean in shoals, hide themselves among the sea-weed, prey on fish or crabs, and, when touched, erect themselves, and wound with the spines of the dorsal fin.

SCOR'PIO, one of the signs of the zodiac, which the sun enters on the 23rd of October. ——*Scorpio*, the name of an ancient military engine, used chiefly in the defence of the walls of a town. It resembled the balista in form, consisting of two beams bound together by ropes, from the middle of which rose a third beam, called the *stylus*, so disposed as to be pulled up and let down at pleasure. On the top of this were fastened iron hooks.——*Scorpio* was the name also of a sort of scourge, which was furnished with small spikes that lacerated the body of the sufferer.

SCOR'PION, in zoology, a genus of wingless insects, containing several species. The tail of the *scorpion* is long and slender, end-

SCORPIONS CARRY THEIR YOUNG ON THEIR BACK, IN ORDER TO PROTECT THEM BY MEANS OF THE STING AT THE END OF THEIR TAIL.



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ing in a pointed weapon or sting, and the whole body is covered with a firm and somewhat hard skin: it has eight eyes, three on each side of the thorax and two on the back, eight feet, and two claws in front. It is found in the south of Europe, where it seldom exceeds four inches in length; but in tropical climates it grows to the length of a foot, and in shape much resembles a lobster. The sting of the larger kinds is much dreaded, and is sometimes fatal to life.——*Water-scorpion*, an aquatic insect of the genus *Nepa*.

SCOT, in law, a customary contribution laid upon all subjects according to their ability. Whoever were assessed to any contribution, though not by equal portions, were said to pay scot and lot.

SCOTISTS, a sect of school-divines and philosophers, thus called from their founder, J. Duns Scotus, a cordelier, who maintained the immaculate conception of the virgin, or that she was born without original sin, in opposition to Thomas Aquinas and the Thomists.

SCREW, one of the six mechanical powers, consisting of a spiral thread or groove cut round a cylinder: when the thread is on the outside it is a male or convex screw; but when it is cut along the inner surface of the cylinder it is a female screw, otherwise called a nut.——*Archimedes' Screw*, in hydraulics, a kind of spiral pump for raising water, so called from its inventor Archimedes.——The *Archimedean screw* has lately been introduced in steam navigation, in order to supersede the use of the cumbrous machinery of paddle boxes at the sides of the vessels, and from the success of the experiment there is reason to expect its general adoption.

SCRIBE, a principal officer in the Jewish law, whose business was to write and interpret scripture. Originally they had their name from their employment, which was transcribing the law, and multiplying copies of it; but in time they exalted themselves into public ministers and expositors of it.

SCRIPTURE, or the HOLY SCRIPTURES, an appellation given, by way of eminence, to the sacred and inspired writings of the Old and New Testaments. Instead of entering into a history of the various books which form the sacred volume (brief notices of such being given under their respective titles), we shall quote a few sentences from Dr. Chalmers, on the supreme authority of the Scriptures:—"The great bulk of Christians," he observes, "have no access to the Bible in its original languages; but they have access to the common translation, and they may be satisfied, by the concurrent testimony of the learned among the different sectaries of this country, that the translation is a good one. We do not confine the principle to critics and translators; we press it upon all. We call upon them not to form their divinity by independent thinking, but to receive it by obedient reading, to take the words as they stand, and submit to the plain English of the Scriptures which lie before them. It is the office of a translator to give a faithful translation of the original. Now that this faithful representation has been given, it is our part to peruse it with care, and to take a fair and a faithful impression of it. It is our part to purify our understanding of all its previous conceptions. We must bring a free and unoccupied mind to the exercise. It must not be the pride or the obstinacy of self-formed opinions, or the haughty independence of him who thinks he has reached the manhood of his understanding. We must bring with us the docility of a child, if we want to win the kingdom of heaven. It must not be a partial, but an entire and unexcepted obedience. There must be no garbling of that which is entire, no darkening of that which is luminous, no softening down of that which is authoritative or severe. The Bible will allow of no compromise. It professes to be the directory of our faith, and claims a total ascendancy over the souls and the understandings of men. It will enter into no composition with us or our principles. It challenges the whole mind as its due, and it appeals to the truth of heaven for the high authority of its sanctions. * * * We do all homage to modern science, nor do we dispute the loftiness of its pretensions. But we maintain that, however brilliant its career in those tracts of philosophy where it has the light of observation to conduct it, the philosophy of all that lies without the field of observation is as obscure and inaccessible as ever. We maintain that, to pass from the motions of the moon to an unauthorised speculation upon the chemistry of its materials, is a presumption disowned by philosophy. We ought to feel that it would be a still more glaring transgression of all her maxims, to pass from the brightest discovery in her catalogue, to the ways of that mysterious Being whom no eye hath seen, and whose mind is capacious as infinity. The splendour and the magnitude of what we do know can never authorize us to pronounce upon what we do not know; nor can we conceive a transition more violent, or more unwarrantable, than to pass from the truths of natural science to a speculation on the details of God's administration, or the economy of his moral government. Instead of theorising upon the nature and properties of that divine light which irradiates the throne of God, and exists at so immeasurable a distance from our faculties, let us point our eyes to that emanation which has actually come down to us. Instead of theorising upon the counsels of the divine mind, let us go to that volume which lighted upon our world nearly 2000 years ago, and which bears the most authentic evidence that it is the depository of part of these counsels. Let us apply the proper instrument to this examination. Let us never conceive it to be a work of speculation or fancy. It is a pure work of grammatical analysis. It is an unmixed question of language. The commentator who



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opens this book with the one hand, and carries *his system* in the other, has nothing to do with it. We admit of no other instrument than the vocabulary and the lexicon. The man whom we look to is the Scripture critic, who can appeal to his authorities for the import and significancy of phrases, and, whatever be the strict result of his patient and profound philology, we submit to it. We call upon every enlightened disciple of lord Bacon to approve the steps of this process, and to acknowledge that the same habits of philosophising to which science is indebted for all her elevation in these latter days, will lead us to cast down all our lofty imaginations, and bring into captivity every thought to the obedience of Christ."

SCROPHU'LA, in medicine, a disease indicated by hard indolent tumours of the conglobate glands in various parts of the body, but particularly in the neck, behind the ears, and under the chin, which after a time suppurate and degenerate into ulcers.

SCRU'TINY, in law, an examination of suffrages or votes at an election, for the purpose of ascertaining whether they are good or not.——In the primitive church, an examination of catechumens who were to receive baptism on Easter-day.

SCULPTURE, the art of giving form and expression, by means of the chisel and other implements, to masses of stone or other hard substances, so as to represent figures of every description, animate and inanimate. It is generally thought that sculpture had its origin from idolatry, as it was found necessary to place before the people the images of their gods to enliven the fervour of their devotion. But to form conclusions concerning the rise and progress of the arts and sciences, without the aid of historical evidence, by analogies which are sometimes accidental, and often fanciful, is a mode of reasoning which, at best, must ever be liable to suspicion. In whatever country the earliest attempts were made, the Egyptians were the first who adopted a certain style of art. Their works were gloomy and grave, but still they were full of deep sentiment, and connected, as would appear by the hieroglyphics which covered them, with poetry and history, and by the mummies, with the belief of immortality. Interesting as the subject would doubtless prove, it is far beyond our limited means to trace the progress of this beautiful art through all its stages in the classic days of Greece, till its decline in Rome, where, though all the treasures of the Grecian sculptors had been carried to deck the Roman capital, the art never became naturalized. During the long and gloomy interval of barbarism that succeeded the downfall of imperial Rome, sculpture, with the sister arts, lay dormant and forgotten. At length, however, through the genius of Michael Angelo Buonarotti, and the skill and perseverance of some of his distinguished successors, seconded by the patronage of the illustrious house of Medici, the treasures of antiquity were collected, and modern art nobly tried to rival the grace and sublimity which existed in the ancient models. Though till within the last century it could hardly be said that a British school of sculpture existed, yet the talent that has been successfully called into action has produced many works of sterling merit; and had we no other names to boast of than those of Flaxman, Chantrey, Baily, and Westmacott, these alone would be sufficient to redeem the national character in this department of art. The sculptor's art, as Sir Joshua Reynolds observes, is limited in comparison of others, but it has its variety and intricacy within its proper bounds. Its essence is correctness: and when to correct and perfect form is added the ornament of grace, dignity of character, and appropriate expression, as in the Apollo, the Venus, the Laocoön, the Moses of Michael Angelo, and many others, this art may be said to have accomplished its purpose.

SCUPPERS, or SCUPPER-HOLES, in a ship, channels cut through the waterways and sides of a vessel at proper distances, and lined with lead for carrying off the water from the deck.——*Scupper hose*, a leathern pipe attached to the mouth of the scuppers of the lower deck of a ship, to prevent the water from entering.

SCURVY (*scorbutus*), in medicine, a disease characterized by great debility, a pale bloated face, livid spots on the hands and feet, weakness in the legs, offensive breath, &c. The scurvy is a disease of a putrid nature, much more prevalent in cold climates than in warm ones, and very generally arises from eating too much salt provisions. It has been found, that in the cure of this disease much more is to be done by regimen than medicines, and that those articles are especially useful, which contain a native acid, as oranges, lemons, &c.

SCURVY-GRASS, in botany, a plant of the genus *Cochlearia*. It grows on rocks near the sea, has an acrid, bitter taste, and, when eaten raw as a salad, is considered an excellent remedy for the scurvy.

SCUTAGE, in English history, a tax or contribution levied upon those who held lands by knight-service.

SCUTTLE, a small hatchway or opening in the deck of a ship, large enough to admit a man, and with a lid for covering it; also a similar hole in the side of a ship, and through the covering of her hatchways, &c.

SCUTUM, in antiquity, a sort of buckler of both an oblong and an oval form.

SCYLLA, a rock in the sea between Sicily and Italy, which was very formidable to the mariners among the ancients. It was opposite to the whirlpool Charybdis.

SCYTHE, an instrument for mowing. It consists of a thin steel blade attached at right angles to a handle of six or eight feet long. For cutting corn there is frequently the addition of what is called a cradle.

SEA, in geography, is sometimes used for the ocean, or that vast tract of water encompassing the whole globe; but, more properly, for a particular part or division of

ATHENS PRODUCED MORE SPLENDID WORKS OF ART DURING THE LIFE OF PERICLES, THAN ROME, THE MISTRESS OF THE WORLD, IN SEVEN CENTURIES.

THE MOST FLOURISHING PERIOD OF SCULPTURE IN ROME WAS THE REIGN OF ADRIAN; AFTER THAT TIME IT CONTINUED TO DEGENERATE.



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A FULL-GROWN SEAL WILL YIELD FROM EIGHT TO TWELVE GALLONS OF OIL, AND A SMALL ONE FROM FOUR TO FIVE GALLONS.

the ocean; as the Irish Sea, the Mediterranean Sea, the Red Sea, the Sea of Marmora or the Black Sea, and the Baltic. [See OCEAN.]

SE'A-CALF, in zoology, the common seal, a species of *Phoca*.

SE'A-GULL, in ornithology, a species of gull, a fowl of the genus *Larus*.

SE'A-HARE, a marine animal of the genus *Lepiyeia*, whose body is covered with membranes reflected; it has a lateral pore on the right side, and four feelers resembling ears. The body is nearly oval, soft, gelatinous, and punctated. Its juice is poisonous, and it is in the highest degree fetid.

SEA-HEDGEHOG, in conchology, a seashell, being a species of Echinus; so called from its prickles, which somewhat resemble those of the hedgehog or urchin.

SE'A-HOLLY, in botany, a plant of the genus *Eryngium*.

SE'A-HORSE, in zoology, the Morse, a species of Walrus. Also, a kind of needle-fish, four or five inches long.

SE'A-KAIL, or SE'A-CALE, in botany, a plant of the genus *Crambe*. The whole plant is entirely smooth and glaucous; the stems are about two feet high and branching, bearing fleshy leaves, some pinnatifid, and others sinuate, undulate, and crisped. Its introduction into gardens as a culinary vegetable is but of recent date; but it is now very common as such in most parts. It should be planted in a deep sandy soil, and blanched either by sand, ashes, litter, or by covering with flower pots. No plant is so easily forced; and, unlike asparagus, it yields produce the first spring after raising from seed.

SEAL, in zoology, an amphibious animal of the genus *Phoca*, inhabiting the Caspian Sea, and many of the coasts of the ocean. Seals have six cutting teeth in the upper jaw, and four in the lower. Their hind feet are placed at the extremity of the body, in the same direction with it, and serve the purpose of a caudal fin; the fore feet are also adapted for swimming, and furnished each with five claws. There are numerous species, as the *leonina*, sometimes 18 feet in length, and the *jubata*, sometimes 25 feet in length, with a mane like a lion, both called *sea-lion*, and found in the southern seas, and also in the N. Pacific; the *ursina*, or sea bear, about 8 feet in length, and covered with long, thick, and bristly hair, found in the N. Pacific; and the common seal (*Phoca vitulina*), from 4 to 6 feet in length, found generally throughout the Atlantic, and the seas and bays communicating with it, covered with short, stiff, glossy hair, with a smooth head without external ears, and with the fore legs deeply immersed in the skin. When it comes on shore, the method of taking it is, by knocking it down with a long club. This creature is gregarious; and when attacked, its companions come to its assistance. Their courage, however, only enables the fisherman to increase his booty. The seal not only furnishes food for the Esquimaux's table, oil for his lamp, and clothing for his person; but even the bones and skin supply materials for his light portable boats and his summer tents. It has been remarked that the brain of this animal is of greater proportionate magnitude than in any quadruped; and that not only does it exhibit in its countenance the appearance of sagacity, but its intelligence is in reality far greater than in most land quadrupeds. Dr. Harwood observes, that, aware of its disposition to become familiar, and its participation in the good qualities of the dog, it is astonishing that mankind have not chosen this intellectual and finely-organized quadruped, for aquatic services scarcely less important than some of those in which the dog is employed on land.——The operation of taking seals and curing their skins, is called *sealing;* and a voyage made for that purpose is called a *sealing-voyage*.

SEAL, in law, the impression or device printed on wax which is put to any deed by way of ratification. The *great seal* is the seal used for the united kingdom of England and Scotland, and sometimes of Ireland. The *privy seal* is that which the king uses to such grants, &c. as pass the great seal. The following is a short description of the new great seal, which has been beautifully executed by Mr. Benjamin Wyon, chief engraver of Her Majesty's Mint.—Obverse: An equestrian figure of Her Majesty, attended by a page. The queen is supposed to be riding in state; over a riding habit she is attired in a large robe or cloak, and the collar of the order of the Garter; in her right hand she carries a sceptre, and on her head is placed a royal tiara or diadem. The attendant page, with his hat in his hand, looks up to the queen, whilst gently restraining the impatient courser, which is richly caparisoned with plumes and trappings. The inscription, "Victoria Dei Gratia Britanniarum Regina, Fidei Defensor," is engraved in Gothic letters, and the spaces between the words are filled with heraldic roses.—Reverse: The queen, royally robed and crowned, holding in her right hand the sceptre, and in her left the orb, is seated upon the throne, beneath a rich Gothic canopy; at the sides are figures of Justice and Religion; and in the exergue are the royal arms and crown; the whole encircled by a wreath, or border of oak and roses. ——*Seal*, a piece of metal having coats of arms or some other device engraven upon it; also the print in wax made by the seal.

SE'A-LEMON, a marine animal of the genus *Doris*, having an oval body, convex, marked with numerous punctures, and of a lemon colour.

SEAL'ING-WAX, a composition of gum lac, melted and incorporated with resin, to which some pigment is added to give it the required colour, as vermillion, ivory black, verditer, &c. Gold sealing-wax is made simply by stirring gold-coloured mica spangles into the melted resin. This is an article that is much adulterated.

SE'A-LION, in zoology, the *Phoca jubata*, a marine animal which has a mane like a lion.

SEALS IN FINE WEATHER PREFER THE ICE TO THE WATER, AND VAST NUMBERS OF THEM ARE TAKEN BY THE HUNTERS ON THE FIELD-ICE.



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SE'AMAN, an individual engaged in navigating ships or other vessels upon the high seas. Various regulations have been enacted with respect to the hiring of seamen, their conduct, and the payment of their wages; but these particulars are too numerous for insertion here, and not within the scope of this work.

SE'AMANSHIP, an acquaintance with the art of managing and navigating a ship; applicable both to officers and the men, and indispensably necessary in those who have the ship under their command.

SE'A-MEW, in ornithology, a species of gull, a marine fowl of the genus *Larus*.

SE'A-NEEDLE. [See GARFISH.]

SE'A-OTTER, in zoology, a species of otter that has hind feet, resembling the seal. It feeds on shell-fish.

SE'A-PIE, or SE'A-PYE, in ornithology, a fowl of the genus *Hæmatopus*, and order *Grallæ*; called also the oyster-catcher, from its thrusting its beak into the oysters when open, and taking out the fish.

SEA-SERPENT. At various times within the last quarter of a century, the public have been entertained with marvellous stories respecting an enormous marine animal seen on the coasts of America, of a size and length varying according to the opinions of those who assert that they have witnessed it, some declaring it 100 feet long, while others describe it as being nearly as many yards. All accounts, however, agree in regard to the protuberances on its back, its vertical sinuosities, and its serpent shaped head. As there is no absolute reliance to be placed on any of the descriptions of this marine monster, we think it merely necessary thus to notice it; and we beg to refer our readers to the article "KRAKEN" in this volume.

SEA-SICKNESS, a disorder incident to most persons on their first going to sea, occasioned by the agitation of the vessel. In voyages, sea-sickness, though it continues in general only for the first day or two, is extremely harassing to some people at intervals, especially on any increased motion of the vessel. The ancient writers recommend acid fruits, or bread and vegetables soaked in vinegar, after the stomach has been cleansed by vomiting, but not before. An old remedy for sea-sickness, and a very common one among sailors, is a draught or two of sea-water, which though disagreeable enough, at such a time too, generally produces the desired effect.

SE'ASONS, the four divisions or portions of the year, namely, Spring, when the sun enters Aries; Summer, when he enters Cancer; Autumn, when he enters Libra; and Winter, when he enters Capricorn. The diversity of the seasons depends upon the oblique position of the sun's path through the heavens, whereby this luminary rises to different heights above the horizon, making the day sometimes longer, and sometimes shorter than the nights. When the sun rises highest at noon, its rays fall most nearly in the direction of a perpendicular, and consequently a greater number is received upon a given spot; their action also, at the same time, continues the longest. These circumstances make the difference between summer and winter. It is found that the sun does not rise so high in summer, nor descend so low in winter, at the present time as it did formerly; in other words, the obliquity of the ecliptic, which is half the difference between the sun's greatest and least meridian altitudes, is growing less and less continually, and the seasons are thus tending, though slowly, to one unvaried spring. [See PRECESSION OF THE EQUINOXES.]

SE'A-URCHIN, in ichthyology, a genus of marine animals, the Echinus of many species. The body is roundish, covered with a bony crust, and often set with movable prickles. [See ECHINUS.]

SEA-WOLF, in ichthyology, a fish of the genus *Anarrhicas*, so named from its fierceness and ravenousness, found in northern latitudes, about Greenland, Iceland, Norway, Scotland, &c. It grows to the length of four or six feet, and feeds principally on shell-fish.

SEBA'CEOUS GLANDS, in anatomy, small glands seated in the cellular membrane under the skin, which secrete the sebaceous humour. This *sebaceous humour* is a suet-like or glutinous matter, which serves to defend the skin and keep it soft.

SEBA'CIC, in chemistry, an epithet for that which pertains to or is obtained from fat; as *sebacic acid*, which is an acid obtained from tallow.

SEBESTAN, in botany, the Assyrian plum, a plant of the genus *Cordia*, a species of jujube.

SE'CANT, in geometry, a line that cuts another, or divides it into two parts. The *secant of a circle* is a line drawn from the circumference on the side, to a point without the circumference on another.——In trigonometry, a secant is a right line drawn from the centre of a circle, which, cutting the circumference, proceeds till it meets with a tangent to the same circle.

SEC'OND, in geometry, chronology, &c. the sixtieth part of a minute, whether of a degree, or of an hour; it is denoted by two small accents, thus (").——In music, an interval of a conjoint degree, being the difference between any sound and the next nearest sound above or below it.——One who attends another in a duel to aid him, and see that all the proceedings between the parties are fair.——*Second terms*, in algebra, those where the unknown quantity has a degree of power less than it has in the term where it is raised to the highest.

SEC'ONDARY, or FLOETZ ROCKS, in geology, those masses of stone and organic substances which are situated over or above the primitive or transition rocks, being dissolved and deposited in strata, consisting of old red sand-stone, floetz lime-stone, floetz gypsum, variegated sand-stone, shell lime-stone, rock salt, chalk formation, floetz trap formation, and coal formations. They abound with organic remains or petrifactions, and are supposed to be me-



THE TEMPERATURE OF THE SEA, AT ALL SEASONS, IS MUCH MORE EQUABLE THAN THE TEMPERATURE OF RIVERS.

SEA-WATER SOON GROWS OFFENSIVE BY KEEPING, OWING TO THE DECOMPOSITION OF ANIMAL AND VEGETABLE MATTER IT HOLDS IN SUSPENSION.

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chanical deposits from water.——*Secondary circles*, in astronomy, are circles passing through the poles of some great circle: thus the meridians and hour-circles are secondaries to the equinoctial. There are also *secondaries* passing through the poles of the ecliptic, by means of which all stars are referred to the ecliptic.——*Secondary qualities*, are the qualities of bodies which are not inseparable from them, but which proceed from casual circumstances, such as colour, taste, odour, &c.

SECOND SIGHT, a superstitious notion, prevalent in the Highlands of Scotland, by which certain persons are supposed to be gifted with a kind of supernatural sight, or the power of seeing future or distant events as if they really happened.

SEC'RETARY, an officer whose duty it is to write letters and other instruments, for and under the orders and authority of a public body or an individual.——*Secretary of State*, in British polity, an officer of the crown who transacts and superintends the affairs of a particular department of government. There are three principal secretaries of state. They are members of the privy-council, and have authority to commit persons for treason, and other offences against the state, as conservators of the peace at common law, or as justices of the peace throughout the kingdom.

SECRE'TION, the process by which a gland, or set of vessels in the animal or vegetable system, changes a fluid of one quality into a fluid of another quality. The organs of secretion in the animal economy are of very various form and structure, but the most general are those denominated *glands*.

SECT, a collective term for a body of persons adhering to some philosophical or religious system, but constituting a distinct party by holding sentiments different from those of other men. Most *sects* have originated in a particular person, who taught and propagated some peculiar notions in philosophy or religion, and who is considered to have been its founder.

SECTA'RIAN, one of a party in religion which has separated itself from the established church, or which holds tenets different from those of the prevailing denomination in a kingdom or state.

SECTILE, a term for a mineral that is midway between the brittle and the malleable, as soapstone and plumbago.

SEC'TION, in general, denotes a distinct part or portion of something which is divided, or the division itself. Such are the subdivisions of a chapter, called also paragraphs and articles.——*Section*, in geometry, a side or surface of a body or figure cut off by another; or the place where lines, planes, &c. cut each other.——*Section of a building*, in architecture, is the same with its *profile*; or a delineation of its heights and depths raised on a plane, as if the fabric was cut asunder to discover its inside.

SEC'TOR, in geometry, a part of a circle comprehended between two radii and the arch; or a mixed triangle, formed by two radii and the arch of a circle.——A mathematical instrument so marked with lines of sines, tangents, secants, chords, &c. as to fit all radii and scales, and useful in finding the proportion between quantities of the same kind.

SEC'ULAR, something that is temporal, in which sense the word stands opposed to *ecclesiastical*: thus we say, secular power, secular jurisdiction, &c. Among catholics, *secular* is more peculiarly used for an ecclesiastic who lives at liberty in the world, not confined to a monastery, nor bound by vows, or subjected to the particular rules of any religious community; in which sense it stands opposed to *regular*. Thus we say, the *secular* clergy, and the *regular* clergy.——The act of rendering secular the property of the clergy, is called *secularization*.

SEC'ULAR GAMES (*ludi seculares*), in antiquity, solemn games held among the Romans once in an age or century. They lasted three days and three nights, during which time sacrifices were performed, theatrical shows exhibited, with combats, sports, &c. in the circus. The first who had them celebrated at Rome was Valerius Publicola, the first consul created after the expulsion of the kings. At the time of the celebration of the secular games, heralds were sent throughout all the empire, to intimate that every one might come and see those solemnities which he never yet had seen, nor would ever see again.

SECUN'DUM AR'TEM, (*Lat.*) according to the rules of art.——In medicine, a term frequently used in prescriptions to denote that the recipe must be made up with particular care.——*Secundum naturam*, according to the course of nature.

SECUTO'RES, in antiquity, a description of gladiators among the Romans, who fought against the *retiarii*. The *secutores* were armed with a sword and a buckler, to keep off the net or noose of their antagonists, and they also wore a casque. This name was also given to such gladiators as took the place of those killed in the combat, or who fought the conqueror.

SED'ATIVES, medicines which have the power of diminishing animal energy without destroying life. At the present day the sedative influence of medicine is generally denied.

SE DEFENDEN'DO, in law, a plea used for one who is charged with the death of another, by alleging that he was under a necessity of committing the act in his own defence.

SEDGE (*carex*), an extensive genus of grass-like plants, but easily distinguished from grasses by having the stem destitute of joints. The roots are perennial and fibrous, the leaves hard and rough on the edge. They are found in all soils, but the greater proportion grow in marshes; and there are altogether more than three hundred known species.

SEDI'TION, in politics, an opposition to the laws, or the administration of justice, and in disturbance of the public peace. In general, it signifies a local or limited oppo-





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dition to *civil* authority; a commotion of less extent than an *insurrection*, and consequently less than *rebellion*.

SED'LITZ, or SEID'LITZ WATER, a mineral water obtained from a village of that name in Bohemia.—The waters are saline and purgative, limpid, sparkling, and of a bitter and salt taste; being composed principally of the sulphates and carbonates of magnesia and lime.

SEED, in botany, the germ of future plants, generally contained in the fruit which is its appendage and support. Every seed consists of an embryo plant. This embryo, which is the whole future plant in miniature, is called the germ or bud; and is rooted in the cotyledon or placenta, which makes its involucrum or cover. The cotyledon is always double; and in the middle, and common centre of the two, is a point or speck, which being acted on by the warmth of the sun and of the earth, begins to protrude its radicle, or root, downwards, and its bud upwards; and as the requisite heat continues, it draws nourishment by the root, and so continues to unfold itself and grow. In some cases, the seeds constitute the fruit or valuable part of plants, as in the case of wheat and other esculent grain; sometimes the seeds are inclosed in the fruit, as in apples and melons. Many kinds of seeds will continue good for several years, and retain their vegetative faculty; whereas others will not grow after they are one year old; this difference is in a great measure owing to their abounding more or less with oil; as also to the nature of the oil, and the texture of their outward covering. All seeds require some share of fresh air, to keep the germ in a healthy state; and where the air is absolutely excluded, the vegetative quality of the seeds will be soon lost. But seeds will be longest of all preserved in the earth, provided they are buried so deep as to be beyond the influence of the sun and showers; since they have been found to lie thus buried twenty or thirty years, and yet vegetate as well as new seeds. How the vegetative life is so long preserved, by burying them so deep in the ground, is very difficult to explain; but the fact is too well established to admit of a doubt on the subject. Books contain an abundance of instances of plants having suddenly sprung up from the soil obtained from deep excavations, where the seeds must be supposed to have been buried for ages. Professor Henslow says, that in the fens of Cambridgeshire, after the surface has been drained and the soil ploughed, large crops of white and black mustard invariably appear. Millar mentions a case of Plantago Psylium having sprung from the soil of an ancient ditch which was emptied at Chelsea, although the plant had never been seen in the memory of man. De Chandolle says, M. Girardin succeeded in raising kidney beans from seeds at least 100 years old, taken out of the herbarium of Tournefort; and raspberry plants have been raised from seeds found in an ancient coffin in a barrow in Dorsetshire, which seeds, from the coins and other relicts met with near them, may be estimated to have been 1600 to 1700 years old.

SEEL'ING, in falconry, the running of a thread through the eye-lids of a hawk when first taken, so that she may see very little, or not at all, to make her the better endure the hood.

SEG'MENT, in geometry, any part of a line in a triangle or other figure cut off by a perpendicular let fall upon it.——*Segment of a circle*, a part cut off by a chord, or that portion comprehended between an arc and a chord.

SEGREGA'TA POLYGA'MIA, in botany, the fifth order of the class *Syngenesia*; comprehending those flowers the several florets of which are included within a common calyx, and also furnished with their proper perianths.

SEIGN'IORAGE, a royal right or prerogative of the king or queen regnant of England, by which they claim an allowance of gold and silver brought in the mass to be exchanged for coin.——A lord of a manor is sometimes styled a *seignior*, and the lordship, a *seigniory*.

SE'IZIN, or SE'ISIN, in law, possession. Seisin in *fact*, or *deed*, is actual or corporal possession; seizin in *law*, is when something is done which the law accounts possession or seisin, as enrolment; or when lands descend to an heir, but he has not yet entered on them. In this case the law considers the heir as *seized* of the estate, and the person who wrongfully enters on the land is accounted a *disseisor*.

SELE'NIATE, in chemistry, a compound of selenic acid with a base.

SEL'ENITE, in mineralogy, foliated or crystalized sulphate of lime. There are two varieties, massive and acicular.

SELE'NIUM, an elementary mineral substance, extracted from the pyrites of a copper mine at Fahlun, in Sweden. It is of a gray, dark brown colour, with a brilliant metallic lustre, and slightly translucent.

SELENIU'RET, a mineral of a shining lead gray colour, with a granular texture. It is composed chiefly of selenium, silver, and copper.

SELENOG'RAPHY, a delineation of the moon, with a description of its phenomena.

SELEU'CIDÆ, a term in chronology designating a particular æra. The æra of the Seleucidæ, or the Syro-Macedonian æra, is a computation of time, commencing from the establishment of the Seleucidæ, a race of Greek kings, who reigned as successors of Alexander the Great, in Syria, as the Ptolemies did in Egypt. This æra we find expressed in the book of the Maccabees, and on a great number of Greek medals, struck by the cities of Syria, &c. The Rabbins call it the æra of contracts: and the Arabs the æra of the two horns. According to the best accounts, the first year of this æra falls in the year 312 before Christ, being about eleven or twelve years after Alexander's death.

SELF-COMMAND', that steady equa-

WE SHOULD TRY SEEDS AS OUR ANCESTORS TRIED WITCHES; NOT BY FIRE, BUT BY WATER; THE GOOD WILL SINK, THE BAD, SWIM.

SEEDS BURIED DEEP IN THE GROUND OFTEN RETAIN THEIR POWER OF VEGETATION FOR MANY YEARS, AND GROW ON EXPOSURE TO THE AIR.



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nimity which enables a man in every situation to exert his reasoning faculty with coolness, and to do what the existing circumstances require. It depends much upon the natural temperament of the body, and much upon the moral cultivation of the mind; and he who from his early youth has been accustomed to make his passions submit to his reason, will, in any sudden emergency, be more capable of acting with a cool and steady resolution, than he who has tamely yielded to or allowed himself to be controlled by the influence of his passions.

SELF-KNOWL'EDGE, a difficult but most important acquisition. It is difficult, because every man is more or less blinded by some fallacy peculiar to himself, and it is disagreeable to investigate our errors, our faults, and our vices. But these difficulties are more than counterbalanced by the advantages of self knowledge. By knowing the extent of our abilities, we shall be restrained from rashly engaging in enterprizes beyond our ability; by investigating our opinions, we may discover those which are based upon false principles; and by examining our virtues and vices, we shall learn what principles ought to be strengthened, and what habits or propensities ought to be abandoned.

SELF-LOVE, an instinctive principle in the human mind which impels every rational creature to preserve his life, and promote his own happiness. It is very generally confounded with selfishness, but their springs of action and their results are very different; for selfishness is the parent and nurse of every vice, while self-love only prompts him who is actuated by it to procure to himself the greatest possible sum of happiness during his whole existence.

SELL'ING OUT, among stockbrokers, a transfer of one's share of stock from one person to another, in distinction from buying in, which is the purchase of the stock held by another.

SELTZER WATER, in medicine, a saline water, slightly alkaline, and highly acidulated with carbonic acid. It is used with great success in many diseases.

SEMEIOT'ICS, or SEMEIOL'OGY, the doctrine of signs; terms used in medical science to denote that branch which teaches how to judge of all the symptoms in a human body, either in a state of health or disease.

SEMI, a prefix to many words, signifying *half*, as *semicircle*, half a circle, &c.

SEMI-AMPLEX ICANT, in botany, embracing the stem half way, as a leaf.

SEMIBREVE, in music, the measure note by which all others are regulated. It contains the time of two minims, which are divided either into four crotchets, eight quavers, sixteen semiquavers, or thirty-two demi-semiquavers.

SEMICOLON, in grammar and punctuation, the point [;] the mark of a pause to be observed in reading, of less duration than the colon, double the duration of the comma, or half the duration of the period. It is used to distinguish the conjunct members of a sentence.

SEMI-COLUM'NAR, flat on one side, and round on the other: a term of botany, applied to a stem, leaf, or petiole.

SEMI-DIAM'ETER, in geometry, a right line drawn from the centre of a circle or sphere to its circumference or periphery; a radius.

SEMI-DIAPA'SON, in music, a defective octave, or an octave diminished by a minor semitone.

SEMI-DIATES'SARON, in music, an imperfect or defective fourth.

SEMI-DITONE, in music, a lesser third, having its terms as 6 to 5.

SEMI-FLORET, in botany, a half floret, which is tubulous at the beginning, like a floret, and afterwards expanded in the form of a tongue.

SEMI-FLOSCULO'SÆ, in botany, the name of a subdivision in the order of compound flowers, both in the natural and artificial system of Linnæus, comprehending such as are made up wholly of fertile ligulate corollets.

SEMI-FLOS'CULOUS, in botany, composed of semi-florets, or ligulate; as a *semi-floseulous* flower.

SEMI-METAL, a metal that is not malleable, as bismuth, arsenic, nickel, cobalt, zinc, antimony, manganese, tungsten, molybdenum, and uranite. The name, however, is usually given to the regulus of these substances.

SEMINARY, in gardening, a seed-plat, or place for raising plants, and keeping them till they are fit to be removed into the garden or nursery.——Any place of education, in which young persons are instructed in the several branches of learning.

SEMINATION, the natural manner of shedding and dispersing the seeds of plants, which is variously effected. Some are heavy enough to fall directly to the ground; others are furnished with a pappus, or down, by means of which they are dispersed by the wind; while others are contained in elastic capsules, which, bursting open with considerable force, throw out the seeds.

SEMI-ORDINATE, in conic sections, a line drawn at right angles to and bisected by the axis, and reaching from one side of the section to the other; the half of which is properly the semi-ordinate, but is now called the ordinate.

SEMI-PELA'GIANS, a sect of Christians, who hold that God has not by predestination dispensed his grace to one more than to another; that Christ died for all men; that the grace purchased by Christ and necessary to salvation, is offered to all men; that man, before he receives grace, is capable of faith and holy desires; and that man being born free, is capable of accepting grace, or of resisting its influences.

SEMI-PRIMI'GENOUS, in geology, of a middle nature between substances of primary and secondary formation.

SEMI-PRO'TOLITE, in geology, a species of fossil of a middle nature between



"THYSELF FROM FLATTERING SELF-CONCEIT DEFEND; NOR WHAT THOU DOST NOT KNOW, TO KNOW PRETEND."—DENHAM.

SELF-PARTIALITY SO COMPLETELY HOODWINKS THOSE WHO ARE UNDER ITS INFLUENCE, AS TO HIDE FROM THEM THEIR GREATEST FAULTS.

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WINDS AND HEAVY RAINS MAKE THE LEAVES OF THE SENSITIVE PLANT CONTRACT AND CLOSE, BUT SLIGHT SHOWERS HAVE NO SUCH EFFECT.

or that quality of the mind which renders it susceptible of impressions; delicacy of feeling; as *sensibility* to pleasure or pain, shame or praise.——In physiology, the capability which a nerve possesses of conveying the sensation produced by the contact of another body with it.

SEN'SITIVE PLANT, a native of tropical America, but often seen in our greenhouses. It is celebrated for its apparent sensibility, shrinking and folding up its leaves on the slightest touch. [See MIMOSA.]

SENSO'RIUM, or SEN'SORY, the brain and nerves, the seat of sense. According to some writers, it not only denotes the different organs of sense, but also that living principle or spirit of animation which resides throughout the body, without being cognizable to our senses, except by its effects.

SEN'TENCE, in law, a judicial decision publicly and officially declared in a criminal prosecution. In *civil* cases, the decision of a court is called a *judgment*.——In grammar, a number of words containing complete sense, and followed by a full pause; a period. A *simple* sentence consists of one subject and one finite verb; as, "the man walks." A *compound* sentence contains two or more subjects and finite verbs; as, "we live, and move, and have our being."

SENTICO'SÆ, the 35th Linnæan natural order of plants, containing the rose, briar, bramble, &c.

SEN'TIMENT, in its primary sense, signifies a thought prompted by passion or feeling. Also, the decision of the mind, formed by deliberation or reasoning.—— *Sentiments*, in poetry, and especially dramatic, are the thoughts which the several persons express, whether they relate to matters of opinion, passion, &c.

SEN'TINEL, or SEN'TRY, in military affairs, a private soldier placed in some post, either to watch any approach of the enemy, to prevent surprises, and to stop such as would pass without order, or have no business where he is posted.

SE'PIA, in ichthyology, the *cuttle-fish*, a genus of the *Vermes mollusca* class and order, of which there are eight species, inhabitants of various seas. The *Sepia officinalis* inhabits the ocean, and is the prey of the whale tribe and plaice; its arms are also frequently eaten off by the conger eel, and are re-produced. [See CUTTLE-FISH].——*Sepia*, a pigment prepared from the black juice secreted in certain glands of the above-described fish. All the varieties of mollusca secrete the same liquor, but that of the *Sepia officinalis* is most preferred. Caustic alkalies dissolve the sepia, and turn it brown. After certain preparations it is fit for the painter, and is a colour of much use.

SEPIA'RIÆ, the 44th natural order of plants in the Linnæan system; including such as grow wild in hedges or are used for hedges, as the briar, privet, &c.

SE'POYS, the name given to the Hindoo or native troops in the service of the East India company, of whom there are nearly 200,000, chiefly infantry, though there are several regiments of cavalry and some companies of artillery. They are all disciplined after the European manner, and are hardy, temperate, and subordinate. Their dress consists of a red jacket, with a white cotton vest, trowsers reaching only halfway down the thighs, and a light turban.

SEPS, in natural history, a species of venomous eft or lizard.

SEPT, in Irish history, a clan, race, or family, proceeding from a common progenitor.

SEPTA'RIA, in mineralogy, a name given to nodules or spheroidal masses of calcareous marl, whose interior presents numerous fissures or seams of some crystalized substance, which divide the mass.

SEPTEM'BER, the ninth month of Numa's year, but the seventh of the year of Romulus, whence it derives its name, viz. *septimus mensis*.

SEPTEMBRISA'DE, in politics, a term in use during the revolutionary commotions in France for any horrid massacre like that which disgraced the 2nd and 3rd of September, 1792.

SEPTEN'NIAL, happening or returning every seven years, as *septennial* parliaments, *i.e.* new parliaments chosen every seven years, as they are at present appointed.

SEPTEN'TRION, or SEPTEN'TRIONAL, pertaining to the north or northern regions of the globe.

SEPTIC, in chemistry, an epithet for any substance that promotes the putrefaction of bodies; as *antiseptic* is for whatever tends to preserve them from putrefaction.

SEPTUAGESIMA, in the calendar, the third Sunday before Lent, or before Quadragesima Sunday: supposed to take its name from being about seventy days before Easter.

SEPTUAGINT, a Greek version of the books of the Old Testament, so called because the translation is supposed to have been made by seventy-two Jews, who, for the sake of round numbers, are usually called the *seventy interpreters*. This translation is said to have been made at the request of Ptolemy Philadelphus, king of Egypt, about 280 years before the birth of Christ. It was in use in the time of our Saviour, and is that out of which all the citations in the New Testament from the Old are taken. It was also the ordinary and canonical translation made use of by the Christian church in the earliest ages; and it still subsists in the churches both of the east and west. It is however observable, that the chronology of the Septuagint makes fifteen hundred years more from the creation to Abraham, than the present Hebrew copies of the Bible.

SEPTUM AU'RIS, in anatomy, the drum of the ear.——*Septum cerebelli*, a process of the *dura mater*, dividing the cerebellum into two equal parts.——*Septum cordis*, the partition between the two ventricles of the

TOUCHING OR AGITATING THE SENSITIVE PLANT PRODUCES A GREATER EFFECT THAN AN INCISION OR CUTTING OFF A PART.



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WHEN SERPENTS ARE IN A STATE OF REPOSE, THEY USUALLY DISPOSE THEMSELVES IN COILS, WITH THE HEAD IN THE CENTRE.

ALL ANIMAL BODIES ARE ELECTRICAL OR GALVANIC COMBINATIONS, AND THE EXCITEMENT IS THE PRINCIPLE OF VITALITY AND ENERGY.

**SERPENTES**, or **SERPENTS**, the second order of *Amphibia*, including seven genera, the boa, coluber, anguis, achrochordus, amphisbæna, cæcilia, and crotalus. They are distinguished from lizards by having no feet, and from eels by having no fins. They have tapering bodies, without a distinct neck; the jaws are not articulated, but dilatable; and they move along the earth by a winding motion, and with the head elevated. Their poison, when they are poisonous, is contained in fangs placed in the upper jaw, and capable of being protruded at pleasure. Some serpents are viviparous, as the rattlesnake; while those which are innoxious are oviparous, depositing their eggs in a kind of chain, in any close warm situation, where they are afterwards hatched.—The following observations on the respiration and deglutition of the boa-constrictors exhibiting in Paris, were lately presented to the Institute: These enormous serpents swallow several large live fowls, one after the other, at a meal. During the repast, which lasts half an hour or more, the throat continues greatly distended, and all communication between the nostrils (through which the reptile usually breathes) and the lungs is completely shut out; but by an admirable provision of nature, the creature protrudes the orifice of its windpipe from between the branches of the lower jaw, quite out of its mouth, to the extent of an inch, and at least three inches beyond its usual situation. The throat being distended to its utmost stretch by the fowl or rabbit in the œsophagus, the glottis is seen protruding between the branches of the lower jaw and the skin of the throat; and the protrusion is greater in proportion as the object in the act of being swallowed is of a large size. Every half-minute, more or less, the orifice of the windpipe is open to nearly half an inch in diameter, and a gush of air like that from a small pair of bellows, issues out; when, fresh air being immediately afterwards taken in, the glottis is again closed by the sphincter muscles till the next expiration, and so on alternately.——We have elsewhere spoken of the *fascinating* power which naturalists have attributed to certain species of the serpent tribe; but in "Jameson's Journal" this opinion of the *fascination* of serpents is denied by Dr. Hancock, who says, "it is not a faculty of charming or of fascinating, in the usual acceptation of the term, which enables certain serpents to take birds; but, on the contrary, the hideous forms and gestures, which strike the timid animals with impressions of horror, stupefying them with terror, and rendering them unfit for any exertion: especially as those serpents to which has been ascribed the power of fascinating, are among the most terrific of the tribe. From the earliest ages we read that serpents have been the most formidable enemies of mankind; and though the lion, the tiger, and the wolf, have been driven from man's immediate haunts, this class of reptiles still defies his power. Along the swampy banks of the Oronoco, where the sun is hot, the forests thick, and the men but few, the serpents cling among the branches of the trees in infinite numbers, and carry on an unceasing war against all animals in their vicinity. Many a traveller has seen large snakes twining round the trunk of a tall tree, encompassing it like a wreath, and thus rising and descending it at pleasure. We cannot, therefore, reject as wholly fabulous, the accounts given by the ancients of the terrible devastations committed by single serpents. It is probable, in early times, when mankind were but thinly scattered over the earth, that serpents, continuing undisturbed possessors of the forest, grew to an amazing magnitude; and every other tribe of animals fell before them. It then might have happened that serpents reigned the tyrants of a district for centuries together. To animals of this kind, grown by time and rapacity to 100 or 150 feet in length, the most powerful beast of the forest was but a feeble opponent. That horrible factor, which even the commonest and most harmless snakes are still found to diffuse, might, in these larger ones, become too powerful for any living being to withstand; and, while they preyed without distinction, they might thus also have poisoned the atmosphere around them. But, as we descend into more enlightened antiquity, we find these animals less formidable, as being attacked in a more successful manner. While Regulus led his army along the banks of the river Bagradas, in Africa, an enormous serpent disputed his passage with it. Pliny says that it was 120 feet long, and that it had destroyed many of the army. At last, however, the battering-engines were brought out against it; and these assailing it at a distance, it was soon destroyed. Its spoils were carried to Rome, and the general was decreed an ovation for its success. There are, perhaps, few facts in history better ascertained than this. An ovation was a remarkable honour, and was given only for some signal exploit that did not demand a triumph. The skin was kept for several days after in the capitol; and Pliny says he saw it there.

**SERPENTINE**, or **SERPENTINE-STONE**, in mineralogy, a primitive rock, composed of felspar and hornblende. It is usually of an obscure green colour, with shades and spots.——*Serpentine*, in chemistry, a long winding worm, or pipe of lead or pewter, which is placed in a tub of water in the distillation of spirits.——*Serpentine verses*, in poetry, verses which begin and end with the same words.

**SERPIC'ULA**, in botany, a genus of plants, class 21 *Monoecia*, order 4 *Tetrandria*.

**SERPI'GO**, in medicine, a species of herpes; called in popular language, a ringworm.

**SERPU'LA**, in conchology, a genus of testaceous animals, of the class *Vermes*, order *Testacea*, having a tubular univalve shell; the inhabitant of which is a terebella.

**SERTULITE**, in the natural history of



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Anglo-Saxon history, the middle thanes, who were rated at 600 shillings.

SEX'TAIN, in poetry, a stanza containing six verses.

SEX'TANT, in mathematics, the sixth part of a circle, or an arc comprehending sixty degrees. Also an astronomical instrument like a quadrant, except that its limb only comprehends sixty degrees.

SEX'TARY-LANDS, in law, lands given to a church or religious house for the maintenance of the sexton or sacristan.

SEX'TILE, the position or aspect of two planets when distant from each other sixty degrees, or two signs.

SEXTILIS, the sixth month of Romulus's year, but the eighth of the year of Numa. It was under the protection of *Ceres*, and was afterwards called *August*, in honour of Augustus.

SEX'TON, an under officer of the church, whose business it is to take care of the vessels, vestments, &c. belonging to the church, and to attend the officiating clergyman, and perform other duties pertaining to the church. He was anciently called the *sacristan*.

SEX'UAL SYSTEM, in botany, the Linnæan system of classifying plants, according to the distinction of sex, the male producing a pollen or dust, which is provided for the fecundation of the pistil or female organ, and is necessary to render it prolific. [See BOTANY.]

SFORZA'TO, in music, an Italian term signifying that the note over which it is placed must be struck with force.

SHAB'RACK, a military term, of Hungarian origin, used for the cloth furniture of a cavalry officer's troop-horse or charger.

SHAD'DOCK, a large species of orange, with a white, thick, spungy rind, and a red or white pulp, of a sweet taste mingled with acidity. Also, the *citrus decumana* of Linnæus.

SHAD'OW, in optics, a privation or diminution of light, by the interposition of an opaque body. *Shadow* differs from *shade*, as the latter implies no particular form, or definite limit; whereas a shadow represents in form the object which intercepts the light; as, the *shadow* of a man, of a tower, &c.——*Shading*, or *shadowing*, in painting, the art of duly representing light and shade in a picture.——*To shadow*, to represent faintly, imperfectly, or typically.

SHAFT, in architecture, the body of a column, between the base and the capital. ——In mining, a pit or long narrow opening or entrance into a mine.

SHAGREE'N, in commerce, a kind of grained leather, supposed formerly to be prepared from the skin of a species of *squalus*, or hound-fish, called the *shagree*. It is, however, now known, that the material is the strong skin, cut along the chine, from the neck to the tail, of the ass or horse. The skin is first soaked in water for some days till the hair is loose enough to be scraped off; after which it is cut and scraped till it becomes scarcely thicker than a bladder. It is then, while wet and soft, fastened to a frame, the flesh side uppermost, and the upper or grain side is strewed over with the hard round seeds of a species of chenopodium; a felt is then laid over it, and the seeds are trodden deeply into the soft yielding skin. The frames are then placed in the shade till the skin becomes dry and the seeds will shake out of their holes. Next, the skin is rasped till the sides of the holes are worn down almost to a level with their bottoms: it is then soaked, first in water, and afterwards in an alkaline ley; and, as it becomes soft, those parts of the skin which were merely depressed by the seeds being forced down upon them, rise above the parts which had been rasped, presenting a granular or pustular surface. The skin is then stained superficially of a green colour by copper filings and sal ammoniac, and is afterwards allowed to dry; lastly, the grains or protuberances are rubbed down to a level with the rest of the surface, which thus presents the appearance of white dots on a green ground. Astracan is the seat of this manufacture, and vast quantities were imported into this country when it was the fashion to use it for watch and spectacle-cases, and a variety of other purposes.

SHAKE, in music, an embellishment, consisting of an alternate reiteration of two notes, comprehending an interval not greater than one whole tone, nor less than a semitone.

SHALE, in natural history, a species of shist, or slate clay, generally of a bluish or yellowish gray colour, but sometimes blackish or inclining to green. Its fracture is slaty, and in water it moulders into powder. It is often found in strata in coal mines, and commonly bears vegetable impressions. ——*Bituminous shale* is a sub-variety of argillaceous slate, impregnated with bitumen, and burns with flame.

SHAM'AN, in Russia, a wizard or conjuror, who by enchantment pretends to cure diseases, ward off misfortunes, and foretel events.

SHAM'MY, a kind of leather prepared from the skin of the chamois, or wild goat, or rather a species of antelope, inhabiting the mountains of Savoy, Piedmont, and the Pyrenees. It is dressed in oil or tanned, and much esteemed for its softness, pliancy, and the quality of bearing soap without damage. A great part of the leather which bears this name is counterfeit, being made of the skin of the common goat, the kid, or even of sheep.

SHAM'ROCK, the Irish name for three-leaved grass, or trefoil. According to legendary tradition, when St. Patrick landed near Wicklow, to convert the Irish, in 433, the pagan inhabitants were about to stone him; but having obtained a hearing, he endeavoured to explain to them the Trinity in Unity; but they could not understand him, till, plucking a trefoil from the ground, he said, "Is it not as possible for the Father, Son, and Holy Ghost, as for these leaves, to grow upon a single stalk?" Upon which (says the legend) the Irish were immediately convinced.—An ingenious naturalist





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UNDER THE MOGUL EMPERORS, CASHMERE FOUND WORK FOR 30,000 SHAWL LOOMS: THERE ARE NOW NOT MORE THAN 6000 EMPLOYED.

has lately attempted to prove that the original plant was not the white clover, which is now employed as the emblem of Ireland. Old authors prove (as he observes) that the *shamrock* was eaten by the Irish; and one who went over to Ireland in the sixteenth century, says it was eaten, and was a *sour* plant. The name, also, of shamrock is common to several trefoils, both in the Irish and Gaelic languages. Now, clover could not have been eaten, and is not sour. *Wood-sorrel* alone is sour, is an early spring plant, is abundant in Ireland, and is a trefoil. The old herbalists call it *shamrog*, and it is sour; while its beauty might entitle it to the distinction of being the national emblem.

SHARK, in ichthyology, a voracious fish of the genus *Squalus*, common in most seas. Some species are said to grow to the length of thirty feet, and are said to weigh 3000 or 4000 lb. They devour almost every animal substance, but some few subsist on marine vegetables.

SHAR'OCK, in commerce, a silver coin in India, worth about a shilling.

SHARPING, in archæology, a customary present of corn made about Christmas, by farmers in some parts of England to the smiths, for sharpening their iron implements of husbandry.

SHAS'TER, among the Hindoos, a sacred book containing the dogmas of the religion of the Bramins and the ceremonies of their worship. It consists of three parts; the first containing the moral law of the Hindoos; the second the rites and ceremonies of their religion; the third the distribution of the people into tribes or classes, with the duties pertaining to each.

SHAWL, a garment used by females as a loose covering for the neck and shoulders. Shawls are made of various materials, as fine wool, silk, or wool and silk mixed, and of various sizes. They were originally manufactured in the heart of India, from the fine silky wool of the Thibet sheep; but the best shawls now come from Cashmere.——At Kilghiet, in the district of Soudah, twenty days' journey from Cashmere, is held the great mart for the worsted employed in the manufacture of those soft stuffs used as shawls, and almost as much in demand by the elegant females of Europe, as the more voluptuous inmates of the East. There are two qualities of worsted: that which is most readily dyed is white; the other species is of a light ash colour, which cannot, without some difficulty, be rendered sufficiently white, and is more frequently used of the natural colour. One goat rarely furnishes more than two or three pounds of worsted per year. After the shearing, the two qualities are carefully separated; after which, they undergo repeated washings in rice water. Great importance is attached to the operation of washing; and the Cashmerians attribute much of the delicacy of their unrivalled productions to the fine qualities of the waters of their valley. The form, size, and border of the shawls, vary according to the different markets for which the manufacturer designs them.

SHAWM, in antiquity, an instrument used in the sacred music of the Hebrews.

SHEATHING, in naval architecture, sheets of copper nailed all over the outside of a ship's bottom, to protect the planks from the pernicious effects of worms.

SHEAVE, in mechanics, a solid cylindrical wheel, fixed in a channel, and movable about an axis; the wheel in which the rope works in the *block*, made either of wood or metal.——*Sheave-hole*, a channel cut in a mast, yard, or timber, in which to fix a sheave. [See BLOCK.]

SHEEP, in zoology, a well-known animal of the genus *Ovis*, but of various breeds; as, the South-down, the Norfolk, Leicester, Cheviot, Merino, Welsh, &c. &c. It is an innocent, docile, and harmless animal; and is properly regarded as one of the most useful species that the Creator has bestowed on man; its flesh being a highly valuable article of food, while its wool constitutes a principal material of our clothing, and forms a fundamental part of the wealth of Britain. "The dressed skin," says Mr. Pennant, in his British zoology, "forms different parts of our apparel; and is used for covers of books. The entrails, properly prepared and twisted, serve for strings for various musical instruments. The bones calcined (like other bones in general), form materials for tests for the refiner. The milk is thicker than that of cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich, that it will not produce thé cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure; insomuch that the folding of sheep is become too useful a branch of husbandry for the farmer to neglect. To conclude; whether we consider the advantages that result from this animal to individuals in particular, or to these kingdoms in general, we may, with Columella, consider this, in one sense, as the first of the domestic quadrupeds."

SHEIK, an elder or chief of the Arabic tribes or hordes. They are very proud of their long line of noble ancestors; and some of them also take the title of *emir*. The Mohammedans also call the heads of their monasteries *sheiks*, and the Turkish mufti is sometimes called *sheik ulislam*, or chief of the true believers.

SHE'KEL, a Jewish silver coin, worth about half-a-crown. There was also the golden shekel, worth 1*l.* 16*s.* 6*d.* sterling.

SHELDRAKE, in ornithology, a bird of the duck tribe, the *Anas tadorna* of Linnæus.

SHELL, in gunnery, a hollow cast-iron ball to throw out of mortars, &c. having a vent through which the powder is put that is to burst it; when it is filled, the fusee for setting fire to the powder is driven firmly into the hole.——In ships, the *shell of a block* signifies the outer frame or case, wherein the sheave or wheel is contained.——*To shell*, in the veterinary art, is said of an aged horse that has the teeth completely bare and uncovered.

SHELLS. The singular regularity,

IT IS COMPUTED THAT THE AVERAGE VALUE OF SHAWLS EXPORTED FROM CASHMERE AMOUNTS ANNUALLY TO 1,800,000 RUPEES.



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beauty, and delicacy in the structure of the shells of animals, and the variety and brilliancy in the colouring of many of them, at the same time that they strike the attention of the most incurious observers, have at all times excited philosophers to inquire into and detect, if possible, the causes and manner of their formation: but the attempts of naturalists, ancient and modern, to discover this process, though often ingenious and plausible, have constantly proved unsuccessful. The variety in the figure, colours, and other characters of sea shells, is almost infinite. The most beautiful come from the East Indies and the Red Sea. The sun, by the great heat that it gives to the countries near the line, heightens the colours of the shells produced there, and gives them a lustre and brilliancy which is wanting in those of colder climates. [See CONCHOLOGY, GEOLOGY, &c.]

SHELTIE, the appellation given to a small but strong horse in Scotland; so called from Shetland, where it is bred.

SHEMITIC, an epithet for anything pertaining to Shem, the son of Noah. What are termed the *Shemitic* languages are the Chaldee, Syriac, Arabic, Hebrew, Samaritan, Ethiopic, and old Phœnician.

SHER'BET, a drink composed of sugar, lemon juice, and water, sometimes with perfumed cakes dissolved in it, with an infusion of a small quantity of rose-water Another kind is made with honey, the juice of raisins, violets, &c.

SHERIFF, an officer in each county of England, nominated by the crown, invested with a judicial and ministerial power, and who takes precedence of every nobleman in the county during the time of his office. His judicial authority consists in hearing and determining causes in his county court, and in keeping the peace of the county; he being by the common law the principal conservator of the peace there; for which reason he is to assist the justices, and raise the posse comitatus when occasion requires. As a minister, he is bound to execute all processes issuing from the king's courts of justice. In the commencement of civil causes, he is to serve the writ, to arrest, and to take bail; when the cause comes to trial he must summon and return the jury; when it is determined, he must see the judgment of the court carried into execution. In criminal matters, he also arrests and imprisons; he returns the jury; he has the custody of the accused; and he executes the judgment of the court. It is also his duty to preserve the rights of the crown; to seize all lands devolved thereto by attainder or escheat; to levy fines and forfeitures; to seize and keep all waives, wrecks, estrays, &c. if they fall immediately to the crown; and to collect the regal rents, if so commanded by process from the exchequer. To execute these various duties, the sheriff has under him many inferior officers; as under sheriff, bailiffs, and gaolers; and the under-sheriff, in reality, performs nearly the whole business here described.

SHER'RY, a Spanish wine, growing in the neighbourhood of Xeres de la Frontera, in the province of Andalusia, near Cadix. Red and white grapes are used indiscriminately; and that which we call dry sherry is the most esteemed.

SHEW'-BREAD, in the Jewish rites, the loaves of unleavened bread which the priest placed on the golden table in the sanctuary. They were shaped like a brick, and weighed about 8lbs. The loaves were twelve in number, representing the twelve tribes of Israel; and were to be eaten by the priest only.

SHIB'BOLETH, a word which was made the criterion by which to distinguish the Ephraimites from the Gileadites, after the defeat of the former by Jephtha. The Ephraimites being unable to give the aspirate (h), pronounced the word *sibboleth*. See Judges xii. Hence, when some characteristic or peculiarity of a party is observed, it is common to speak of it as the *shibboleth* or watch-word of that party.

SHIELD, a broad piece of defensive armour, formerly borne on the left arm, as a defence against arrows, darts, lances, and other weapons. The shields of the ancients were of different shapes and sizes, and generally made of leather, or wood covered with leather. The surface, or as it is called in heraldry, the *field*, of the shield, or escutcheon, appears to have been in all ages decorated with figures emblematical or historical, serving to express the sentiments, record the honours, or at least distinguish the person of the warrior.

SHIL'LING, an English silver coin, equal in value to twelve pence. The word is supposed, by some, to be derived from the Latin *silicus*, which signifies a quarter of an ounce, or the 48th part of a Roman pound. In support of this etymology, it is alleged that the Saxon shilling was also the 48th part of the Saxon pound. At the time of the conquest, the shilling was worth fourpence. Afterwards the French *solidus* of twelvepence, which was in use among the Romans, was called by the name of *shilling*; and the Saxon shilling of fourpence took the Norman name of *groat* or *great coin*, because it was the largest English coin then known.

SHIN'GLES, in medicine, an eruptive disease, which spreads round the body like a girdle.——Thin boards used for covering shells and other building.——*Shingle*, round gravel, or the pebbles, &c. thrown by the sea on the beach.

SHIP, a general name for all large vessels which are built upon a peculiar principle, and adapted for the purposes of navigation; more particularly those equipped with three masts and a bowsprit, the masts being composed of a lower mast, top-mast, and top-gallant mast, each of which is provided with yards, sails, &c. Ships are of various sizes, and fitted for various uses; most of them, however, fall under the denomination of ships of war and merchantships. They have gradually increased in bulk from the open galleys of the ancients of fifty or sixty tons, to a timber ship of 5,000. A first-rate man-of-war carries 120 guns, 24 and 32 pounders, with a crew of

CONNOISSEURS PRETEND TO BE ABLE TO DISTINGUISH A SHELL TAKEN UP WITH THE FISH ALIVE, FROM ONE FOUND ON THE SHORE.

THE MEDITERRANEAN AND NORTHERN OCEANS CONTAIN A GREAT VARIETY OF SHELLS, MANY OF WHICH ARE ELEGANT AND BEAUTIFUL.



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or rim of iron nailed to the hoof of a horse to defend it from injury.——The *shoe of an anchor* is a small block of wood, convex on the back, with a hole to receive the point of the anchor fluke. It is used to prevent the anchor from tearing the planks of the ship's bow, when raised or lowered.

SHORE, the coast or land adjacent to the sea or some large river: the sea shore has been divided by some writers into three portions, the first of which is that tract of land which the sea just reaches in storms and high tides, but which it never covers; the second part of the shore is that which is covered in high tides, but is dry at other times; and the third is the descent from this, which is always covered with water.

SHORL, in mineralogy, a substance usually of a black colour, found in masses of an indeterminate form, or in prisms of three or nine sides. The surface of the crystals is longitudinally streaked. The amorphous sort presents thin, straight, distinct columnar concretions, sometimes parallel, at other times diverging or stelliform. The mineralogists of the last century comprehended a great variety of substances under the name of *shorl*, which later observations have separated into several species, and which are now known as *actinolite, augite, leucite*, &c.

SHORLA'CEOUS, in mineralogy, an epithet for such substances as partake of the nature and characters of shorl.

SHOR'LITE, a mineral of a yellowish green colour, found in irregular oblong masses or columns, inserted in a mixture of quartz and mica or granite.

SHOT, a general name for any missile discharged from cannon and fire-arms of all kinds. Shot used in war is of various kinds; as—1, *round shot* or *balls*; those for cannon made of iron, those for muskets and pistols, of lead: 2, *double-headed shot* or *bar shot*, consisting of a bar with a round head at each end: 3, *chain-shot*, being two balls fastened together by a chain: 4, *grape-shot*, consisting of a number of balls bound together with a cord in canvas on an iron bottom: 5, *case shot* or *canister shot*, by which is meant a great number of small bullets enclosed in a cylindrical tin box: 6, *langret* or *langrage*, which consists of pieces of iron of any kind. Musket balls are called *small shot*; and those small globular masses of lead used by sportsmen in killing birds and other small game, are known by the name of *shot*, of different numbers according to their size. In the manufacturing of this, the liquid metal is allowed to fall like rain from a great elevation, and the cohesive principle gives rotundity to grains of shot. In its descent, the drops become truly globular, and before they reach the end of their fall are hardened by cooling.——*Shot of a cable*, the splicing of two cables together, or the two cables thus united: thus, it is said, a ship will ride easier in deep water with one *shot of cable* thus lengthened, than with three short cables.

SHOT'-RACKS, in a ship, wooden frames bolted to the crampings and head-ledges round the hatchways on the decks to contain the different shot.——*Shot-locker*, a hole planked up to contain the different shot.

SHREW'-MOUSE, in zoology, a small harmless animal belonging to the genus *Sorex*. It resembles the mole in its head, and in other parts the common mouse, burrows in the ground, and feeds on corn, insects, &c.

SHRIKE, or Butcher-bird, in ornithology, a genus of birds called *Lanius*, remarkable for the fiereeness and cruelty of their attacks on other birds.

SHROUDS, in a ship, a range of large ropes extending from the head of a mast to the right and left sides of the ship, to support the mast. There are main shrouds, fore shrouds, mizen shrouds, bowsprit shrouds, &c.

SHROVE-TU'ESDAY, the Tuesday after Quinquagesima Sunday, or the day immediately preceding the first of Lent; being so called from the Saxon word *shrive*, to confess; that day having been employed by the people in confessing their sins to the parish priest, and thereby qualifying themselves for a more religious observance of the approaching fast.

SHRUB, a small woody plant between a bush and a tree. Many of these are ornamental plants, bearing beautiful flowers, as the acacia, lilac, &c.

SHUTTLE, an instrument used by weavers for shooting the thread of the woof in weaving from one side of the cloth to the other, between the threads of the warp.

SIAL'AGOGUE, a medicine that promotes the salivary discharge.

SIBE'RIAN, pertaining to Siberia, a name given to a great and indefinite extent of territory in the north of Asia; as, a *Siberian* winter.

SIB'ERITE, in mineralogy, red tourmalin.

SIB'YLS, in antiquity, certain women who pretended to be endowed with a prophetic spirit. They resided in various parts of Persia, Greece, and Italy; and were consulted on all important occasions. They delivered oracular answers, and, as it is pretended, wrote certain prophecies on leaves in verse, which are called *Sibylline verses;* but these Sibylline oracles seem to have been composed to answer political purposes. The number of *Sibyls*, according to Varro, was ten. The Romans kept their books with infinite care, and consulted them, on great occasions, with the utmost credulity.

SIDE'REAL, in astronomy, pertaining to the stars. A *sidereal day*, the time in which any star appears to revolve from the meridian to the meridian again, which is 23 hours 56 minutes 4 seconds, and 6‴ of mean solar time, there being 366 sidereal days in a year, or during the 365 diurnal revolutions of the sun.

SID'ERITE, in mineralogy, phosphate of iron.

SIDERI'TIS, in botany, a genus of plants,

THE SHOT USED IN THE ROYAL NAVY IS PRINCIPALLY CONFINED TO THREE SORTS, NAMELY, ROUND, GRAPE, AND CANISTER.

THE SIBYLLINE BOOKS WERE CONSULTED IN ADVERSITY WITH THE ROMANS, AS THE ORACLES WITH THE GREEKS.



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carp, or pod, having the seeds fixed to both sutures. Hence the term *siliquous* plants for such; and *siliculous* for those which have silicles or little pods.

SILIQUO'SÆ, one of the Linnæan natural orders of plants, including those which have siliquæ or pods for their seed-vessels, like the pea, bean, lupin, &c.

SILK, and SILK-WORM. Silk, in its original state, is properly an animal fluid hardened by the air; being an extremely soft and glossy thread, spun by the *Bombyx* or Silk-worm, of the genus *Phalæna*. From a small egg, of the size of a pin's head, proceeds a minute dark-coloured worm, the food of which is the mulberry-leaf. After casting its skin three or four times, as its bulk increases, it becomes at length a rather large caterpillar, of a white colour, more or less tinctured with blue or with yellow. The period of its existence in this state being arrived, it ceases to eat, and soon begins to form the silken ball which renders it so famous. On the first day of its work, it makes the web, or loose outward silk by which it fastens its nest to the branch, paper, or other substance that nature or art puts in its way. On the second day it begins to form its *folliculus* or ball; and on the third is quite hid by its silk. At the end of ten days, the work is finished, and the transformation of the insect complete. In a state of nature, everything now remains quiet till the pupa becomes a *phalæna*, or moth: but where the insect is bred as an article of trade, the ball is taken from the mulberry-tree in the condition at which it is now described to be arrived, and unwound within a proper time; because if left to itself, the *phalæna* would pierce its way through, and destroy the silk. As soon as the worms have produced their balls, or cocoons, they become an article of trade; for in those countries where silk is cultivated, few persons reel off their cocoons, but sell them to others, who make this operation a separate business. The silk, as formed by the worm, is so very fine, that if each ball, or cocoon, was reeled separately it would be totally unfit for the purpose of the manufacturer; in the reeling, therefore, the ends of several cocoons are joined and reeled together out of warm water, which, softening their natural gum, makes them stick together so as to form one strong thread.——The first *silk* known in Europe appears to have been brought from China. Though this commerce began in a very early age, it was not before A.D. 555 that the arts of rearing the worms and working the silk were known to the western world. When silk was first introduced into Rome, it was so costly that it sold for its weight in gold, and was only used by a few ladies of the patrician rank. In the beginning of the reign of Tiberius, a law was passed, that no man should disgrace himself by the effeminate practice of wearing silken garments; but the profligate Heliogabalus broke this law, by wearing a dress composed wholly of silk. The fashion, thus set, was quickly followed, and from the capital it soon extended to the provinces. Greece was distinguished not only for the rearing of silk-worms, but for the skill and success with which the manufacture was carried on by the inhabitants of Thebes, Corinth, &c. In time it spread to Italy; and in 1480 it was introduced into France. For a long time the English were indebted for silk to foreign countries; but in consequence of the persecution of the Protestants in France in the year 1686, nearly 50,000 of the inhabitants fled from that country and took refuge in England; and many of them being silk manufacturers, we may trace the origin of the *silk trade* in Spitalfields. It appears, however, that there was a company of silk-women in England so early as the year 1455; but these were probably employed in needle-works of silk and thread. Italy supplied England and all other parts with the broad manufactures till 1489. In 1620 the broad manufacture was introduced into this country; and in 1686 the company of silk-throwsters employed above 40,000 persons.——As a specimen of individual enterprise in this branch of manufacture, we must notice Sir Thomas Lombe, who, about the year 1724, erected in an island on the Derwent, near Derby, a curious mill for the manufacture of silk, the model of which he had brought from Italy, at the hazard of his life. This machine was deemed so important, that, at the expiration of Sir Thomas's patent, parliament voted him 14,000*l.* for the risk he had incurred, and the expense attending the completion of the machinery. This contained 26,586 wheels; one water-wheel moved the whole, and in a day and night it worked 318,504,960 yards of organzine silk. Such, however, have been the extraordinary improvements in the arts, that this once wonderful piece of workmanship has been disused for some years, and more simple and complete machinery erected, which performs twice the work.——Among other novelties is the introduction of *glass* as a material in woven silk. To those who have never heard of it, this may well excite surprise, in consequence of its brittle nature. The fact, however, is indisputable, the new material being substituted for gold and silver thread, than either of which it is more durable, possessing besides the advantage of never tarnishing. What is technically called the warp, that is, the long way of any loom manufactured article, is composed of silk, which forms the body and groundwork, on which the pattern in glass appears as the weft or cross work. The requisite flexibility of glass thread for manufacturing purposes is to be ascribed to its extreme fineness, as not less than 50 or 60 of the original threads (produced by steam engine power) are required to form one thread of the loom. The process is slow, as not more than a yard can be manufactured in 12 hours. The work is extremely beautiful and comparatively cheap, inasmuch as no similar stuff where bullion is really introduced can be purchased for anything like the price at which this is sold: added to this, it is, as far as the glass is concerned, imperishable.

SILK-COTTON, in botany, the *Bombax*



THE LABOUR IN PREPARING RAW SILK AFFORDS MUCH MORE EMPLOYMENT TO THE COUNTRY PRODUCING IT, THAN ANY OTHER RAW MATERIAL.

IN EARLY TIMES, WHEN SILK WAS FIRST BROUGHT FROM THE EAST INTO EUROPE, IT WAS CONSIDERED TOO EXPENSIVE EVEN FOR ROYALTY.

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selling ecclesiastical preferment; or the corrupt presentation of any one to a benefice for money or reward. The word is derived from the Chaldæan Magus, Simon, who, according to the Acts of the Apostles, wished to buy of them the power of working miracles.

SIMOON', a hot suffocating wind, that blows occasionally in Africa and Arabia, generated by the extreme heat of the parched deserts and sandy plains. Its approach is indicated by a redness in the air, and its fatal effects are to be avoided by falling on the face and holding the breath.

SIM'PLE CON'TRACT, in law, a term applied to debts, where the contract upon which the obligation arises is neither ascertained by matters of record, nor yet by deed or special instrument.

SIM'PULUM, in antiquity, a vessel resembling a cruet, used at sacrifices and libations for taking a very little wine at a time.

SIMULA'TION, the assumption of a deceitful appearance or character. It differs from *dissimulation*, inasmuch as the former assumes a false character, while the latter only conceals the true one; but both are truly designated by the word *hypocrisy*.

SIN'APISM, in medicine, a mustard poultice; a mixture of mustard and vinegar generally applied to the calves of the legs or soles of the feet as a stimulant, and employed in low states of fevers and other diseases.

SIN'CIPUT, in anatomy, the forepart of the head, reaching from the forehead to the coronal suture.

SINE, in geometry, a right line drawn from one end of an arc perpendicular to the radius drawn to the other end.

SI'NECURE, a church benefice without cure, or care, or guardianship of souls; as where there is a parish without church or inhabitants. The word is applied to any post that brings profit without labour.

SI'NE DI'E, in parliamentary language, a Latin phrase used for the adjournment of a debate without fixing a day when it shall be resumed.——In law, a term applied to a defendant when judgment is given in his favour, and he is suffered to go *sine die*, or dismissed the court.

SINGING. [See MUSIC, MELODY, &c.]

SING'ING BIRDS. The vocal inmates of the grove, as poets have been pleased to term these feathered songsters, have furnished man, in every clime, with a source of delight not unmixed with wonder; and we believe there are few persons who, at times, have not been sensible of the exhilarating effects arising from their dulcet warblings. In a correct sense of the term, the female of no species of birds ever sings. To her is allotted the care and toil of incubation, and the principal share of nursing the helpless brood; but while she is performing her parental duties, her mate is exerting all his vocal blandishments. The power of song is chiefly effected by the disposition of the larynx, which in birds is not, as in mammifera and amphibia, placed wholly at the upper end of the windpipe; but, as it were, separated into two parts, one placed at each extremity. Parrots, ravens, starlings, bullfinches, &c. have been taught to imitate the human voice, and to speak some words: singing birds also, in captivity, readily adopt the song of others, learn tunes, and can even be made to sing in company. In general, however, the songs of birds in the wild state appear to be formed by practice and imitation. Those who have paid attention to the singing of birds, know also that their voice, energy, and expression, differ as widely as in man; and, agreeably to this remark, Mr. Wilson, the celebrated ornithologist, says, he was so familiar with the notes of an individual wood-thrush, that he could recognise him among all his fellows the moment he entered the woods. The singing of most birds seems entirely a spontaneous effusion, produced by no exertion, or occasioning no lassitude of muscle, or relaxation of the parts of action. In certain seasons and weather, the nightingale sings all day and most part of the night; and we never observe that the powers of song are weaker, or that the notes become harsh and untuneable, after these hours of practice. The cuckoo is probably the only bird that seems to suffer from the use of the organs of voice.

SIN'ISTER, in heraldry, a term denoting the left side of the escutcheon.——*Sinister aspect*, in astrology, an appearance of two planets happening according to the succession of the signs; as, Saturn in the same degree as Aries, &c.

SINK'ING FUND, in politics, a term applied to a portion of the public revenue set apart to be applied to the reduction or diminution of the national debt.

SIN'NET, in seamen's language, rope yarn bound about ropes to prevent them from galling.

SI NON OM'NES, in law, a writ on association of justices, by which, if all in commission cannot meet at the day assigned, it is allowed that two or more of them may proceed to finish the business.

SIN'OPER, in mineralogy, red ferruginous quartz, occurring in small perfect crystals, and in masses resembling some varieties of jasper.

SIN'TER, in mineralogy, a substance which appears under different forms, and is variously designated. *Calcareous sinter* is a variety of carbonate of lime, composed of successive layers, concentric, plane, or undulated, and nearly or quite parallel. *Siliceous sinter* is of a dull grayish white colour, and of a light, brittle, and fibrous texture. *Opaline siliceous sinter* is whitish, with brown, black, or bluish spots, and its fragments appear to be dendritic. *Pearl sinter*, or *flos'rite*, has a gray hue, and occurs in cylindrical, stalactitic, and globuiar masses.

SIN'UATE, in botany, an epithet for a leaf that has larged curved beaks in the margin, as in the oak.

SI'NUS, in anatomy, a cavity in a bone or other part, wider at the bottom than at the entrance. The veins of the dura

THE STUDY OF SINGING, AS AN ART, HAS BEEN CONSIDERED AN EFFECTUAL INSTRUMENT IN THE CIVILISATION OF MANKIND.

IN 1716, SIR ROBERT WALPOLE PROJECTED THE SINKING-FUND SYSTEM, WHICH WAS BROUGHT INTO FULL OPERATION BY MR. PITT.



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WHEREVER ASTRATUM OF SLATE IS CONTIGUOUS TO GRANITE, GREISS, OR MICA SLATE, IT HAS A MORE SHINING LUSTRE.

porous; more so in some places than others; and the pores are also larger in some parts than others. Some of these pores are ducts of sebaceous glands, and others serve not only to transmit hairs, but, it is supposed, the greatest part of the perspirable matter itself. The *rete mucosum* gives the colour to the skin: it is black in the negro [See NEGRO]; white, brown, or yellowish, in the European. The skin is extremely distensible and elastic; it is thickest on those parts intended by nature to bear weight and pressure, consequently it is thick on the back, the soles of the feet, and the palms of the hands. It is thinner on the fore part of the body, on the insides of the arms and legs, and where its surfaces touch opposite surfaces.——*Skin*, in commerce, the hairy or other membrane stripped off any animal to be prepared by the tanner, skinner, or parchment-maker.

SKINK, in the natural history of reptiles, the common name of a genus of lizards found in warm climates, all of which have a long body covered with rounded imbricate scales.

SKOL'EZITE, a mineral, occurring crystalized and massive, colourless and nearly transparent. When a small portion of it is placed in the exterior flame of a blowpipe, it twists like a worm, becomes opaque, and is converted into a glassy substance.

SKOR'ADITE, a mineral of a greenish colour, resembling the martial arseniate of copper. It occurs massive, but is generally crystalized in rectangular prisms.

SKULL, the bony covering of the brain, consisting of three divisions, namely, the *sinciput*, or fore part; the *occiput*, or hind part; and the *vertex*, or crown. It forms the forebead, and every part of the head except the face.

SKUNK (*mephitis putorius*), in zoology, a carnivorous quadruped, about the size of a cat, and allied to the weasel and badger tribe; inhabiting most parts of North America, and celebrated for the intolerable stifling stench which it discharges when threatened with danger, and which is its defence against its enemies. Such, indeed, is the offensive nature of the fluid which the skunk ejects, that the smallest drop is sufficient to render clothes detestable to the wearer for a great length of time, and without any perceptible diminution in intensity. The genus is exclusively American.

SKY, the name we give to the blue expanse of the heavens, or the region which surrounds the earth beyond the atmosphere. Sir Isaac Newton attributes the azure colour of the sky to vapours beginning to condense there, and acquiring a sufficient consistence to reflect the most reflexible rays; but whatever be the cause, the sky assumes a different aspect as seen in different countries, which is accounted for by the different degrees of the rarefaction of the air, as well as of the nature of terrestrial exhalations: on these varieties, indeed, the beauty of a climate partly depends. The azure arch, which, by an optical illusion, on every side limits our view, seems to be lower in England than it is in Italy. In vain do we look for that pure, serene, and boundless sky, that atmosphere of clear blue, or of vivid red, which so much contributed to inspire a Raphael and Correggio. But even the Italian sky is said to be cloudy in comparison with that which, in summer, canopies the islands of the Pacific Ocean.

SKY'-SCRAPER, in ships, a small triangular sail sometimes set above the royal.

SLAB, in carpentry, an outside plank or board sawn from the sides of a tree, which is frequently of very unequal thickness.—— In masonry, a table of marble for hearths and other purposes.

SLAM, in chemistry, a substance frequently produced in the making of alum, by calcining it too much or too little.

SLATE, a kind of stone of a bluish or gray colour, which, when first dug from the quarry, is of an exceedingly soft texture, and is therefore easily cut or split into plates for coverings of the roofs of houses, paving, &c. Used in the place of tiles, the blue slate is a very light and durable covering: the gray slate is much more lasting than tiles; but slating of either kind is expensive, because the roof must be first covered with boards, to which the slates are fastened with tacks and fine mortar. The slate principally in use in London is brought from Wales, and it is thence forwarded to all parts of the United Kingdom. There are also in use some other kinds of slate, the best sort of which is the Westmoreland slate. The *patent slating*, as it is called, consists in selecting the largest slates, and those also of a uniform thickness. Neither battening nor boarding is required for these slates, and a great saving of the timber takes place, besides diminishing the weight of the roof.——*Drawing slate, or black chalk*, has a grayish-black colour; is very soft, sectile, easily broken, and adheres slightly to the tongue. It occurs in beds in primitive and transition clay-slate; also, in secondary formations. It is used in crayon drawing, its trace upon paper being black and regular.——*Whet slate, or Turkey hone*, is a slaty rock, containing a great proportion of quartz, in which the component particles are so very small as to be scarcely discernible.——*Mica slate* is composed of the minerals mica and quartz, the mica being generally predominant.

SLA'VERY. We find no mention of slaves before the deluge; but immediately after, *viz.* in the curse of Canaan: whence it is inferred, that servitude increased soon after that period; for in Abraham's time we find it was generally established. Some attribute its origin to Nimrod, because it was he who first began to make war, and, consequently, to make captives; dooming such as he took, either in battles or irruptions, to a state of slavery. Among the Romans, when a slave was set at liberty, he changed his name into a surname, and took the *nomen* or *prænomen* of his master; to which he added the *cognomen* he had been called by when a slave.—

THE DRAWING SLATE, WHICH IS USED AS A DRAWING MATERIAL, COMES FROM ITALY, SPAIN, AND NATRUHE, IN THURINGIA.



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in which no selfish interests were involved —purely to do a great moral right, and redress a great moral wrong. For that one unalloyed act alone, she is foremost among the nations;—and the world is her debtor, too, for all that she has done to establish the principle of peace. A fearful debt on that head, as on the other, she had, indeed, to wipe off:—but it may be unhesitatingly said, that a more important step has been made towards the happiness of mankind, in the last twenty years, by the European recognition of this one principle, than by any other fact since the promulgation of that religion itself of whose precepts this wisdom is a part. It is an entire revolution in the politics of the world, all whose ages and nations till this day have arbitrated with the sword."

*The Horrors of a Slave Ship.*—Mr. R. Walsh, in his Notices of Brasil, says, in describing a slave-ship, examined by the British man-of-war in which he returned from Brasil, in May, 1829, "She had taken in, on the coast of Africa, 336 males and 226 females, making in all 562, and had been out seventeen days, during which she had thrown overboard fifty-five. The slaves were all enclosed under grated hatchways, between decks. The space was so low, that they sat between each other's legs, and stowed so close together, that there was no possibility of their lying down, or at all changing their position by night or day. As they belonged to, and were shipped on account of, different individuals, they were all branded, like sheep, with the owners' marks, of different forms. These were impressed on their breasts, or on their arms, and as the mate informed me, with perfect indifference, burnt with a red-hot iron! Over the hatchway stood a ferocious looking fellow, with a scourge of many twisted thongs in his hand, who was the slave-driver of the ship; and whenever he heard the slightest noise below, he shook it over them, and seemed eager to exercise it." The author proceeds to state, that these poor creatures were packed up and wedged together as tight as they could cram, in low cells, three feet high, so that they had not more than 23 square inches for each man, and 13 inches for each woman; while the heat of these horrid places was so great, and the odour so offensive, that it was quite impossible to enter them, even had there been room. The English officers insisted that the poor suffering creatures should be admitted on deck, to get air and water; and "they came swarming up, all in a state of total nudity, like bees from the aperture of a hive, till the whole deck was crowded to suffocation from stem to stern; so that it was impossible to imagine where they could all have come from, or how they could all have been stowed away. After enjoying, for a short time, the unusual luxury of air, some water was brought; it was then that the extent of their sufferings was exposed in a fearful manner. They all rushed like maniacs towards it. No entreaties, or threats, or blows, could restrain them; they shrieked and struggled, and fought with one another, for a drop of this precious liquid, as if they grew rabid at the sight of it." It is melancholy to add, that the wretched captives were soon again doomed to their loathsome dungeon: for the English ship was obliged to release the slaver, as it could not be proved after a strict examination, that he had exceeded the privilege, allowed to Brazilian ships, of procuring slaves south of the line.——Another appalling instance, fresh in our recollection, was related at the first anniversary meeting of the "Society for the Extinction of the Slave-trade, and for the Civilization of Africa," held at Exeter-hall, London, June 1, 1840. His Royal Highness Prince Albert presided; and in introducing the subject, he expressed his deep regret that the benevolent exertions of England to abolish the horrid traffic in human beings, which he characterized as "at once the desolation of Africa and the disgrace of Europe," had not hitherto proved effectual. The meeting to which we are alluding was for the purpose of carrying out a project, as extensive and benevolent as it was glorious; nothing less than the introduction of the arts of peace and the blessings of Christianity, throughout benighted and degraded Africa. We do not pretend to give even the most concise sketch of the general proceedings: we merely refer to them in order to introduce the following awful fact, as quoted by Sir R. Peel, from a public paper, entitled "The Shipping List of the Cape of Good Hope," dated March 17, 1840, and which was there inserted among other miscellaneous matter, as an article of intelligence. It ran thus: "Loss of Slavers at Mozambique Harbour, during a hurricane: On the 24th of January, 1840, during a hurricane from the south-east, two slavers, a ship and a brig, were wrecked at Mozambique harbour, but the crews of both, and 200 slaves on board the brig were saved. The ship had arrived the preceding day, and had not taken in any slaves. It was reported that the brig, commanded by a Spaniard, had originally 900 slaves on board, but during the hurricane the hatches had been battened down, and on opening them 300 were found to have died from suffocation. Again the hurricane came on; the hatches were battened down a second time, and the consequence was, that 300 more of the slaves perished from the same cause, and 100 of the remaining 300 died on the passage to Mozambique harbour." And what, said the right hon. baronet, had been the conduct of the parties to this mortality? Why, *they returned for the purpose of getting a fresh supply!* Well, indeed, might he exult in the prospect he saw around him; and hail it as the omen of better days; and truly might he say, as he complimented the royal president on his character and position, as well as on the part he had that day taken—"it is not unworthy of the illustrious station you occupy on the right hand of the throne of England—it is not unbecoming this high station, these great advantages



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THE ARABS SEEM TO HAVE CONTINUED THE PRACTICE OF SLAVERY FROM THE DAYS OF THEIR GREAT ANCESTOR, ISHMAEL.

THE SLAVE-TRADE GAVE RISE TO INTERMINABLE WARS AMONG THE AFRICAN TRIBES, AND WAS A SOURCE OF PROFIT TO THE PETTY DESPOTS.

INCOMBUSTIBLE BODIES, AS STONES OR BRICKS, ARE SO CALLED, BECAUSE ON BEING HEATED THEY UNDERGO NO CHANGE, AND SOON COOL AGAIN.

THREE OR MORE PERSONS ASSEMBLED TO ASSIST IN THE ILLEGAL LANDING OF GOODS, ARE BY LAW DEEMED GUILTY OF FELONY.

**SLUR**, in music, a mark connecting notes that are to be sung to the same syllable, or made in one continued breath of a wind instrument, or with one stroke of a stringed instrument.

**SMALL-POX**, in medicine, a very contagious pustular disease. [See VARIOLA, COW-POX, &c.]

**SMALTS**, or **SMALT**, an oxyde of cobalt and melted glass pounded; used in papermaking and various other arts, particularly in the painting of earthenware.

**SMARAGDITE**, another name for the emerald. Hence, *smaragdine*, an epithet for anything pertaining to or resembling an emerald; of an emerald green.

**SMARAGDITE**, a mineral, otherwise called *green diallage*.

**SMELT**, in ichthyology, a small and delicate flavoured fish.

**SMI'LAX**, in botany, a genus of plants, class 22 *Dioecia*, order 6 *Hexandria*. The species are perennials, including the medicinal smilax or sarsaparilla.

**SMEL'LING**, that sense which resides in the nerves distributed over the membrane that lines the interior of the nostrils, and powerful in proportion to its quantity and formation, being far more sensible in some animals than in others. According to Boerhaave, the act of smelling is performed by means of odorous effluvia, floating in the air, being drawn into the nostrils, in inspiration, and struck with such force against the fibrillæ of the olfactory nerves, as to shake them, and give them a vibratory motion; which action, being communicated thence to the common sensory, occasions an idea of a sweet or fetid, a sour or an aromatic object, &c. And he further observes, that the matter in animals, vegetables, fossils, &c. which chiefly affects the sense of smelling, is that subtile substance inherent in their oily parts, called spirit; for that, when this is taken away from the most fragrant bodies, what remains has scarce any smell at all; but this, poured on the most inodorous bodies, imparts to them a fragrancy. Volatile particles chiefly are distinguished by smell, and fixed ones by the taste; perhaps because the thick mucous cuticle spread over the tongue, intercepts the action of the more subtile salts, which easily affect the softer and less covered nerves of the nostrils. The action of smells is strong, but of short continuance; because particles in a very minute state are applied to naked nerves in the immediate vicinity of the brain. Hence the deleterious and also the refreshing action of odours, by which people are resuscitated from faintings, &c. Hence the violent sneezing excited by acrid particles, the evacuation of the bowels by the smell of purgatives, and the power of antipathies.

**SMELTING**, in metallurgy, the fusion or melting of the ores of metals, in order to separate the metalline part from the earthy, stony, and other parts. The art of fusing the ores after roasting, is the principal and most important of metallurgic operations.

**SMOKE**, the visible vapour or exhalation that is expelled from a substance while burning; or the rarefied, but undecomposed part of a combustible; always proportioned in quantity to the incombustible matter within a substance, or to the matter with which oxygen does not readily combine. The word *smoke* is particularly applied to the volatile vapour expelled from coal, wood, vegetable matter, &c.; that which exhales from metallic substances being more generally called *fume*.

**SMOKE-JACK**, a machine consisting of an arrangement of wheels put in motion by the smoke and air, which ascend the chimney with force sufficient to turn a spit.

**SMUGGLING**, the offence of importing goods without paying the duties imposed by law. While such enormous duties are imposed upon many foreign productions, all the vigilance of coast guards and revenue cutters must fail in putting a stop to the practice of smuggling. The temptation is evidently too strong for those who have engaged in it, to discontinue the practice; —nay, who is there that does not, directly or indirectly, encourage it? Smuggling owes its existence to oppressive duties, in many cases amounting to absolute prohibition; and although a large "preventive" force is kept in constant operation, at an incredible expense, no one who is at all acquainted with the commercial transactions of the metropolis, or who has witnessed the alacrity with which the smuggler is assisted by the peasantry on the coasts (particularly of Kent and Sussex), can wonder that he so often continues to elude the vigilance of the revenue officers, or that he dares to defy the pains and penalties of the custom laws.

**SMUT**, in husbandry, a disease in corn, when the grains, instead of being filled with flour, contain foul black powder.

**SNAIL**, a genus of insects, the *Limax* of Linnæus. They are sometimes without shells, and called *slugs*; and sometimes provided with shells composed of carbonate of lime, combined with coagulated albumen, secreted by the skin of the insect, the mouth of the shell being extended by layers of the substance to the margin. The eyes of snails are in their horns, which they draw in at pleasure. All the land *testacea* (shell animals) appear to have the power of becoming torpid at pleasure, and independent of any alterations of temperature. Thus, snails, if placed in a box at Midsummer, will attach themselves to its sides, and remain in this dormant state for several years. Even in their natural haunts, they are often found in this state during the summer season, when there is a continued drought. With the first shower, however, they recover, and move about again.

**SNAKE** *(anguis)*, in zoology, the common and general name of serpents; but, in England, generally applied to those which are oviparous. [See SERPENTS.]—To the account there given, we shall merely add the following observations relative to the singular use of the ribs of snakes in assisting progressive motion. "Sir Everard Home



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SOAP IS A PERFECT TEST OF SULPHATE OF LIME IN WATER, WHICH IS KNOWN TO BE HARD WHEN IT FLOATS IN CLOUDY FLAKES.

or for certain inferior services of husbandry to be performed to the lord of the fee; a tenure distinct from chivalry or knight's service, in which the render was uncertain.

SOCI'ETY, in its most enlarged sense, signifies the whole race or family of man; as, "the true and natural foundations of *society*, are the wants and fears of individuals." In a narrower sense, it signifies, persons living in the same neighbourhood, who frequently meet in company. It is also a name given to any association of persons uniting together, and co-operating to effect some particular object, as the societies or academies for promoting the cause of literature: benevolent societies, for purposes of public charity; missionary societies, for sending missionaries abroad; and various others. In society, a man not only finds more leisure, but better opportunities of applying his talents with success. The *social principle*, in fact, is of such an expansive nature, that it cannot be confined within the circuit of a family, of friends, or a neighbourhood: it spreads into wider systems, and draws men into larger communities and commonwealths; since it is in these only that the more sublime powers of our nature attain the highest improvement and perfection of which they are capable.

SO'CII, among the Romans, were such states as were in alliance with the commonwealth of Rome. In the time of Polybius, all Italy was subject to the Romans; yet no state or people in it had been reduced into the form of a province, but retained in general their own laws and governors, and were termed *socii*, or confederates. The *socii* received no consideration for their service, but a distribution of corn. The *auxilia* differed from the *socii*, as being borrowed at a certain pay from foreign princes and states. The name of *socii* in time ceased; all the natives of Italy being accounted Romans, and honoured with the *jus civitatis*.

SOCK (*soccus*), the shoe of the ancient actors in comedy. Hence the word is used for comedy, and opposed to *buskin* or tragedy; as, "I have no talents either for the *sock* or *buskin*."

SOC'LE, in architecture, a flat square member under the basis of pedestals of vases and statues, serving as a foot or stand.

SOC'OTRINE AL'OES, a fine kind of aloes from Socotra, an isle in the Indian ocean.

SOCRAT'IC PHILOS'OPHY, the doctrines and opinions, with regard to morality and religion, maintained and taught by Socrates. [See PHILOSOPHY.]

SO'DA, a mineral alkali, obtained from several sources, but principally from plants growing on the sea-coast. It is sometimes found in a native state, as in the lakes in Egypt, which, being dried by the heat of the sun, leave beds of soda, or natron, as it is there called. Soda is, however, for the most part, procured from the *salsola soda*, a plant which grows among the cliffs on the coast. Like potash, it is procured by lixiviation from the ashes of burnt plants, but only from those which grow on the sea shores. Soda very much resembles potash, but it is rather more fusible; and when it comes into the air, it crumbles into powder instead of liquefying, as potash does. In order to obtain it in a state of purity, the subcarbonate of soda must be treated like the potash of commerce, with lime and ardent spirit.

SO'DALITE, a mineral of a bluish green colour, found crystalized or in masses. It obtains its name from the large portion of mineral alkali which enters into its composition.

SO'DA-WATER, a very weak solution of soda in water supersaturated with carbonic acid. Late discoveries have shown that the carbonic acid gas exists in a liquid state in soda-water; when, therefore, it is hastily swallowed, it robs the stomach of a certain portion of heat, as it passes from a liquid into a gaseous state. It will therefore cool as well as distend that organ. It should, however, be borne in mind, that the use of carbonate of soda, either in water or malt liquor, is, in most constitutions, of great utility, but more especially to those persons who are of a bilious temperament.

SO'DIUM, the metallic base of soda. It is white, opaque, and when examined under a film of naptha, has the lustre and general appearance of silver. It is exceedingly malleable, and is much softer than any of the common metallic substances. It conducts electricity and heat in a similar manner to the basis of potassa; and small particles of it inflame by the Galvanic spark, and burn with bright explosions. When sodium is exposed to the atmosphere, it immediately tarnishes, and by degrees becomes covered with a white crust, which deliquesces much more slowly than the substance that forms on the basis of potassa. This crust is pure soda. Sodium combines with the metals; in the quantity of one-fortieth, it renders mercury a fixed solid of the colour of silver, and the combination is attended with a considerable degree of heat. It makes an alloy with tin, without changing its colour, and it acts upon gold and lead when heated. In its state of alloy it is converted into soda by exposure to the air, or by the action of water, which it decomposes with the evolution of hydrogen.

SO'FA, an elegant long seat, with a stuffed bottom and a covering of chintz, hair-cloth, silk, or other material. The sofa of the Orientals is a kind of alcove raised half a foot above the floor where visitors of distinction are received. It is also a seat by the side of the room covered with a carpet.

SOF'FIT, in architecture, any timber ceiling formed of cross beams, the compartments of which are enriched with sculpture, painting, or gilding. Also, the under side or face of an architrave, enriched with compartments of roses.

SOIL, the earthy materials in which plants grow; consisting of compounds of silica, lime, alumina, magnesia, oxyde of

TO PROCURE PURE SODA WE MUST BOIL A SOLUTION OF THE PURE CARBONATE WITH HALF ITS WEIGHT OF QUICKLIME.



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POROUS VESSELS ARE USED FOR WINE-COOLERS, BECAUSE THEY IMBIBE A QUANTITY OF THE WATER IN WHICH THEY ARE DIPPED.

when, to the people of the higher latitudes, it appears to stand still, not changing its place in the degrees of the sodiac. The solstitial points in an artificial globe, are those in which the ecliptic, or path of the sun, intersects the tropics.——*Summer solstice*, the 21st of June, when the sun enters the tropic of Cancer, in its progress southward, and gives the longest day. *Winter solstice*, the 21st of December, when the sun enters the tropic of Capricorn in its progress northward, and gives the shortest day.

SOLV'ENT in chemistry, any menstruum or corrosive liquor which will dissolve substances.

SOLU'TION, the intimate mixture or perfect union of solid bodies with fluids, so as seemingly to form one homogeneous liquor. The word is applied both to the *act* of combination, and to the *result* of the process: thus common salt disappears in water, that is, its solution takes place, and the liquid obtained is called a *solution* of salt in water. Solution is the result of attraction or affinity between the fluid and the solid.——In algebra and geometry, *solution* signifies the answering of a question, or the resolving of a problem.——In surgery, the term *solution of continuity* denotes the separation of connected substances or parts, applied to a fracture, laceration, &c.

SO'MATIST, one who denies the existence, and consequently the agency, of spiritual substances.

SOMATOL'OGY, the doctrine of bodies or material substances.

SOM'MITE, in mineralogy, nepheline; a mineral which occurs in small crystals.

SOMNAM'BULISM, the phenomenon of sleep-walking, during which the sensitive and willing powers govern the muscles, while the reasoning or reflecting organs are asleep; but in dreaming it is the contrary. The phenomena attendant on sleep-walking are very singular, the person affected performing many voluntary actions, implying a certain degree of perception of external objects. Some instances which have come to our own knowledge appear incredible enough; but our experience falls infinitely short of the marvellous accounts we have met with in print. It is asserted of some somnambulists, that they have been known to undress and take a cold bath; of others, that they saddled and bridled their horses, and afterwards rode to a considerable distance; and of others again, whose habits perhaps were more sedentary, who wrote letters, made verses, &c.; while in most cases they quietly returned to their beds, and awoke at their usual hour utterly unconscious of their previous vagaries. "In the case of the somnambuli," says Dugald Stewart, "the mind retains its power over the limbs, but possesses no influence over its own thoughts, and scarcely any over the body, excepting those particular members of it which are employed in walking."

SON, in its primary sense, is the male issue of a parent, father or mother. In a more extended sense, as often used in the Scriptures, sons include descendants in general; as, we are all *sons of Adam*. Also a native or inhabitant of a country; as, the *sons* of Britain.

SONA'TA, in music, a piece or composition of music, wholly executed by instruments; and which, with regard to the several kinds of instruments, is what the cantata is with respect to vocal performances.

SON'CHUS, in botany, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*. The species are perennials.

SONG, in general, that which is sung or uttered with musical modulations of the voice, whether of the human voice or that of a bird. The *songs* of a country are characteristic of its manners.

SON'NET, a short poem, which, according to its Italian model, consists of fourteen lines; and divides itself into two parts, the first of eight, and the latter of six lines. Authors who compose sonneta are called *sonneteers*.

SONOM'ETER, an instrument for measuring sounds or the intervals of sounds.

SOOT, a black substance formed by combustion, or disengaged from fuel in the process of combustion, rising in fine particles and adhering to the sides of the chimney or pipe conveying the smoke. *Soot* consists of oil, carbon, and other substances. The soot of burnt pine forms lampblack.

SOOTH'SAYING, the foretelling of future events by persons without divine aid or authority, and thus distinguished from *prophecy* by inspiration.

SO'PHI, a title given to the sultan of Persia, as grand master of the order of the *Sophis*, originally a religious body of the Mohammedan church in that empire.

SOPH'ISM, a subtilty in reasoning, the arguments not being logically supported, or in which the inferences are not justly deduced from the premises.

SOPHISTS, a name at first given to philosophers, and those who were remarkable for their wisdom: it was afterwards applied to rhetoricians, and lastly to such as spent their time in verbal niceties, logical conundrums, sententious quibbles, and philosophical enigmas. The following, called the *Pseudomenos*, for example, was a famous problem amongst the ancient *sophists*: "When a man says, *I lie*, does he *lie*, or does he *not lie?* If he lies, he speaks truth; and if he speaks the truth, he lies."

SOPHISTICATION, the adulterating, counterfeiting, or debasing the purity of something by a foreign admixture.

SOPORIFIC, in medicine, any drug, plant, &c. that has the quality of inducing sleep.

SOPRA'NO, in music, one of the intermediate portions of the scale, which is a species of the treble, suited to the female voice.

SOR'BATE, in chemistry, a salt formed by the union of the sorbic acid with some base.

SOR'BIC ACID, in chemistry, the acid procured from the fruit of the service-tree.

SORBONNE, the name of a college originally instituted for the education of secu-

IN HOT COUNTRIES, APARTMENTS ARE RENDERED COOL BY THROWING WATER ON THE CURTAINS, WHICH THERE FORM THE SIDES OF A ROOM.



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A FEW FEET BELOW THE EARTH'S SURFACE, THE TEMPERATURE IS NEARLY THE SAME IN EVERY PART OF THE GLOBE.

subscription of 1,000,000*l.* at the rate of 300*l.* for every 100*l.* capital. Persons of all ranks crowded to the house in such a manner, that the first subscription exceeded 2,000,000*l.* of original stock. In a few days this stock advanced to 340*l.*; and the subscriptions were sold for double the price of the first payment. In a little time the stock reached 1000*l.*, and the whole nation was infected with the spirit of stock-jobbing to an incredible extent. The infatuation prevailed till the 8th of September, when the stock began to fall, and some of the adventurers awoke from their delirium. On the 29th of the same month, the stock had sunk to 150*l.*: several eminent goldsmiths and bankers, who had lent great sums upon it, were obliged to stop payment and abscond; and the ebb of this portentous tide was so violent that it carried every thing in its way, and an infinite number of families were overwhelmed with ruin. Public credit sustained a terrible shock; the nation was thrown into a ferment; and nothing was heard but the ravings of grief, disappointment, and despair. Some principal members of the ministry were deeply concerned in these fraudulent transactions; and though they used all their influence with the Bank to assist them in supporting the credit of the South Sea Company, and actually obtained from that corporation a large sum, the bubble burst; and a committee of the House of Commons, to whom the subject had been referred, declared they had discovered a train of the deepest "villany and fraud that hell ever contrived to ruin a nation." Suffice it to add, that some of the "directors" were expelled the house; others taken into custody; and the estates of several confiscated by act of parliament, after a certain allowance was deducted for each, according to their conduct and circumstances.——In this commercial country, rife with all kinds of speculations, and among whose inhabitants there are swarms of greedy adventurers, ever on the watch to entrap the credulous and unwary,—where new companies—"capital one million"—burst upon the sight of the astonished multitude, in all the splendour of rank and influence,—as their veritable heralds, the *prospectuses*, testify,—we think the foregoing sketch of one great national bubble cannot be improperly introduced. But we lament to say, that periodical bubbles appear to be indigenous to Britain. Let us hope they may not become perpetual. Yet how many there are who view our present position with a fearful recollection of the year 18.5—that memorable period of widespread misery, so delicately termed *the panic*—

When merchants, with cargoes of trouble,
Ran foul of the banks, and broke brokers;
When "mining shares" proved worthless rubble,
And quidnuncs no longer were jokers;
When bills and bad debts were made double,
When "paper" was mere chaff and stubble,
When credit itself was a bubble,
And the nation—a nation of croakers!

SOV'EREIGN, a supreme ruler, or one who possesses the highest authority without control. A king or queen regnant.——An English gold coin, value twenty shillings.

SOY, a dark coloured sauce, prepared in China and Japan from the seeds of a sort of bean. It is eaten with fish, &c. This is an article which is believed to be very extensively counterfeited.

SPACE, in the abstract, mere extension. In relation to bodies, space is the interval between any two or more objects. The universe of space, and probably of matter and phenomena, in an indefinite variety of forms, are necessarily infinite in extent; for the notion of bound and definite size is the mere result of our experimental knowledge, and relative considerations.——There is another mode of space, the idea of which we get from the fleeting and perpetually perishing parts of succession, which we call *duration*.——*Space*, in geometry, denotes the area of any figure, or that which fills the interval or distance between the lines that terminate it.——*Space*, in mechanics, the line which a movable body, considered as a point, is conceived to describe by its motion.——*Space* (among printers), a slip of wood or metal for making a space between words or lines.

SPADI'CEOUS, in botany, an epithet for a kind of aggregate flower, having a receptacle common to many florets, within a spathe, as in palms, &c.

SPA'DIX, in botany, the receptacle in palms and some other plants, proceeding from a spathe.

SPA'HI, or SPA'HEE, one of the Turkish cavalry.

SPAN, a measure taken from the space between the end of the thumb and the tip of the little finger, when extended. The span is estimated at three hands' breadths, or nine inches.——In seamen's language, a small line or cord, the middle of which is attached to a stay.

SPAN'DREL, the space between the curve of an arch and the right lines inclosing it.

SPAN'IEL, a dog used in sports of the field, remarkable for his sagacity and obedience. It is generally white, with large brown, liver-coloured, or black spots, of irregular shape and size, and long pendulous ears. There are several varieties, the largest and most beautiful of which is the Alpine or St. Bernard's breed; and the smallest (*canis brevipilis*), usually called king Charles's breed, is used as a lap-dog.

SPAR, in natural history, a class of fossils, not inflammable nor soluble in water; pellucid, colourless, and emulating the appearance of crystal, but wanting its distinguishing characters.——Any sort of earth which breaks easily into cubical or laminated fragments with polished surfaces.——A name given to the round pieces of timber used for the yards and topmasts of ships.

SPAR'ROW, in ornithology, a bird so nearly allied to the finches, that they are classed by Linnæus under the generic name of *Fringilla*. It is a mischievous, cunning

FLUOR SPAR IS CALLED VIVIANITE, WHEN FUSED, FROM ITS RESEMBLING GLASS.



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THE SOLID CONTENTS OF A SPHERE ARE TO THOSE OF A CYLINDER IN THE PROPORTION OF TWO TO THREE; TO THOSE OF A CONE, AS TWO TO ONE.

chase and sale of shares in public companies, as well as "dabbling" in the stocks, and a variety of other hazardous transactions which might be named, are different species of gambling, and are often no less ruinous.

SPEC'ULUM, in optics, any polished body impervious to the rays of light, such as polished metals, looking-glasses, &c.——*Speculum*, in surgery, an instrument for dilating and keeping open a wound, in order to examine it attentively.

SPEECH, the faculty of expressing thoughts by words or articulate sounds. [See LANGUAGE.]

SPELT, in botany, a species of grain of the genus *Triticum*; called also German wheat.

SPEL'TER, in mineralogy, common zinc, which contains a portion of lead, copper, iron, manganese, plumbago, and a little arsenic.

SPERM, or SPERMACE'TI, the unctuous matter contained in the head of a certain species of whale, the *Physeter* or *Cachalot*. It is found also in other parts of the body; and from this substance fine oil is extracted, and candles of excellent quality are manufactured.

SPHA'CELUS, in medicine and surgery, gangrene, or mortification of the flesh of a living animal. Also, *caries* or a decay of the bone. Hence, to *sphacelate*, to mortify; and *sphacelation*, the process of becoming gangrenous.

SPHENE, a mineral substance, found amorphous and in crystals. It is composed of nearly equal parts of oxyde of titanium, silex, and lime. Its colours are various, inclining either to gray, yellow, brown, or different shades of green.

SPHERE, in geometry, a solid body contained under one uniform round surface, such as would be formed by the revolution of a circle about its diameter, as an axis. Its surface is consequently in every part equally distant from a point called its centre.——*Sphere*, in astronomy, the concave orb or expanse which invests our globe, and in which the heavenly bodies appear to be fixed, at an equal distance from the eye.——*Sphere*, in geography, a certain artificial disposition of circles transferred to the surface of the earth from the surface of the sphere of the heavens on which they are primarily supposed to be drawn. [See GLOBE, ARMILLARY SPHERE, &c.]——A *right sphere*, that aspect of the heavens in which the circles of daily motion of the heavenly bodies are perpendicular to the horizon, as a person at the equator would view it.——A *parallel sphere*, that in which the circles of daily motion are parallel to the horizon. Thus, a spectator at either of the poles would view a *parallel* sphere.——An *oblique sphere*, that in which the circles of daily motion are oblique to the horizon; as is the case to a person situated at any point between the equator and the pole.——The word *sphere* has also another signification of wide extent, and in continual use; as, "every man has his particular *sphere* of action;" "events of this kind have repeatedly fallen within the *sphere* of my observation;" "I have no acquaintance with persons in his *sphere* of life," &c.

SPHER'ICS, the doctrine of the sphere, particularly of the several circles described on its surface, with the method of projecting the same on a plane.——*Spherical geometry*, that branch of geometry which treats of spherical magnitudes.——*Spherical trigonometry*, that branch of trigonometry by which we learn to compute the sides and angles of spherical triangles.——*Spherical triangle*, a triangle formed by the mutual intersection of three great circles of the sphere.

SPHEROID', or figure approaching to a sphere, but not perfectly spherical. A spheroid is either *oblate* or *prolate*. The earth is found to be an *oblate spheroid*, that is, flatted at the poles; whereas an opinion had been formed by some astronomers, that it was a prolate or oblong sphere.

SPHEROSID'ERITE, in mineralogy, a substance found in the basaltic compact lava of Steinheim; called also glass lava or hyatite.

SPHER'ULE, a little globe or spherical body. Thus when mercury is poured upon a plane, it divides itself into a great number of minute *spherules*.

SPHER'ULITE, in mineralogy, a variety of obsidian or pearl-stone, found in rounded grains.

SPHINC'TER, in anatomy, the name of several muscles, whose office is to shut or close the aperture round which they are placed.

SPHINX, in antiquity, an emblematical figure, composed of the head and breasts of a woman, the wings of a bird, the legs and claws of a lion, and the body of a dog; and said to have been the Egyptian symbol of theology.——Also, a fabulous monster of Thebes. According to mythological history, its father was Typhon the gigantic son of Terra, and it was sent by Juno to afflict the Thebans, which it did by proposing enigmatical questions to persons, whom it killed if they could not expound them. At length, Œdipus having explained its famous riddle on man, it precipitated itself from a rock, and was dashed to pieces. This riddle was as follows: "What creature is that which goes in the morning upon four; at noon, upon two; and in the evening, upon three legs." Œdipus answered, "It is man; who, in his infancy, crawls upon all four, walks afterwards on two, till old age brings him to his staff, which constitutes three legs."——*Sphinx*, in entomology, a genus of insects of the order *Lepidoptera*. There are said to be two hundred species of this genus. They fly abroad in the morning and evening, are very slow on the wing, and often make a humming kind of noise: they extract the nectary of flowers with the tongue: the larva has sixteen feet, and is pretty active.

SPHRAG'ID, a species of ochreous clay which falls to pieces in water with the emission of many bubbles; called also *earth of Lemnos*.

THE SPHERICAL FORM PERVADES THE WHOLE UNIVERSE; FROM THE DROP OF DEW TO THE CELESTIAL ORBS, NATURE SEEMS EVER STRIVING FOR IT.



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struction, was, in principle, similar to that still in use; and the process of fulling and preparing the cloth, seems to have resembled the modern practice in every particular point, except that of shearing the nap, with which the ancients do not appear to have been acquainted. In early records we do not, however, read of cloth being measured, which appears to have arisen from a custom of weaving no more cloth in one piece than was sufficient to form a single dress. Muslins are to this day manufactured by the primitive loom in India, probably without alteration of the form in use during the earliest ages of its invention. The manufacture of flexible stuffs by means of machinery, operating on a large scale, is an invention of the last century, and has given birth to some of the most elaborate combinations of mechanism, and constitutes an important source of our national wealth.—By a statement which has lately appeared, the estimated number of looms propelled by water and steam power, in the United Kingdom, is 58,000. The average produce, taking it at twenty-two square yards a day, makes 1,254,000, or 1,741 yards a minute; weekly, 7,524,000; monthly, 31,300,000; yearly, 376,200,000. Allowing six yards to each person for yearly consumption, it will supply 62,700,000, and will cover 62,700 acres of ground. In length it would extend 213,750 miles, or reach across the Atlantic Ocean seventy-one times.

SPIN'NING JENNY, a machine used to spin cotton, &c. by which many spindles are turned by a horizontal wheel.

SPI'NOZISM, the doctrines or principles of Spinoza, a native of Amsterdam, consisting of a heterogeneous mixture of atheism and pantheism.

SPIN'STER, in law, the common title by which an unmarried woman, without rank or distinction, is designated.

SPIN'THERE, a mineral of a greenish-gray colour.

SPI'RAL, in geometry, a curve line of the circular kind, which in its progress recedes from a point within, called its centre. The fusee or spring of a watch gives a good idea of this curve.——*Spiral*, in application to architecture and sculpture, is a curve that ascends winding about a cone or spire, like a screw, so that all the points of it continually approach the axis.

SPIRE, in architecture, a steeple that continually diminishes as it ascends, whether conically or pyramidally. The highest spire in England is that of Salisbury, 410 feet high, or seven feet higher than the cross of St. Paul's, and double the height of the Monument, near London bridge.——The term *spire* was used by the ancients for the base of a column, and sometimes for the astragal or torus.——In botany, a stalk or blade of grass.

SPI'RIT, in metaphysics, an incorporeal being or intelligence.——Also, excitement of mind, animation, or whatever has power or energy; the quality of any substance which manifests life and activity; disposition of mind excited and directed to a particular object, &c.——*Holy Spirit*, the third person in the Trinity.

SPIR'ITS, any strong, pungent, and stimulating liquor; or, in other words, the evaporation of fermented liquors, after the carbonic acid gas has been expelled from the vegetable solution in water, leaving some water, an excess of hydrogen, and part behind, which after distillation produces spirits of wine, brandy, rum, whiskey, &c. The specific gravity of the purest spirit, or liquid hydrogen, is 825, water being 1000, and, of course, when excited by the access of flame, it combines with the oxygen of the air, and burns rapidly, forming water, and carbonic acid gas. It never freezes.

SPIRI'TUAL, mental; intellectual; immaterial. Also, relating to sacred things, or ecclesiastical.——*Spiritually minded*, having the affections refined and elevated above sensual objects, and placed on God and his law.——*Spiritual court*, a court held by a bishop or other ecclesiastic.

SPLANCHNOL'OGY, in medical science, a treatise or description of the viscera; also the doctrine of diseases of the internal parts of the body.

SPLEEN, in anatomy, a soft, spongy substance, situated on the left side, between the eleventh and twelfth false ribs, and covered with a firm membrane, arising from the peritoneum. It is of an oval form, about one-fifth smaller than the liver; hollow towards the stomach, and convex towards the diaphragm and ribs: however, it is often irregular, and has many fissures. The use of the spleen has been much controverted; but the most probable opinion seems to be, that it serves to render the blood more fluid, out of which the bile is to be afterwards secreted; and that by this means obstructions, which must otherwise be frequent, are prevented, and the secretion of the bile promoted.——In figurative language we use the word spleen for ill-humour; as, to vent one's *spleen*.

SPLENT, in the veterinary art, a callous substance or insensible swelling on the shank-bone of a horse.

SPLICE, a term in common use with seamen, &c., signifying to separate the strands of the two ends of a rope, and unite them by a particular manner of interweaving them; or to unite the end of a rope to any part of another by a like interweaving of the strands.

SPLIN'TER, in a general sense, a thin piece of wood split off.——In surgery, a thin piece of wood or other substance, used to hold or confine a broken bone when set.——*Splintery*, in mineralogy, an epithet for any substance which discovers scales arising from splits or fissures parallel to the line of fracture.

SPOD'UMENE, a mineral occurring in laminated masses, easily divisible into prisms with rhomboidal bases; the lateral faces shining and pearly, the cross fracture uneven and splintery. Before the blowpipe it exfoliates into little yellowish scales.

SPON'DEE, in the Latin and Greek pro-



SPIRIT OF WINE, WILL BURN WITH VARIOUS COLOURED FLAMES, IN CONSEQUENCE OF ITS ADMIXTURE WITH DIFFERENT SUBSTANCES.

THE EFFECTS OF SPIRITS ARE SUDDEN, VIOLENT, AND TRANSITORY; THOSE OF WINE ARE GRADUAL, GENTLE, AND LASTING.

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tion of grammar to write it otherwise. Yet we have *teaspoonsful* of this, and *tablespoonsful* of that, in every page of nearly all our "domestic" guides: nay, even the apothecaries (who surely *ought* to know better) *now* almost invariably direct us to take "two or three *spoonsful*," as the case may be. These remarks are of course applicable to all words similarly formed, as *pailsful, handsful, mouthsful, bellysful!* from pailful, handful, &c.]

SPORADIC, in medicine, an epithet for such diseases as occur in particular persons and places, in distinction from *epidemic*, which affect persons generally or in great numbers. The term *sporadic* implies, neither general nor contagious.

SPOTS, in astronomy, dark places observed on the sun, moon, and planets. The spots on the sun vary; while those on the moon and planets remain the same, and by their motion make the rotation of those bodies manifest. [See SUN.]

SPRING, the season of the year when increasing solar heat restores the energy of vegetation. It comprehends the months of March, April, and May, in the middle latitudes north of the equator.——*Spring*, in mechanics, denotes a thin piece of tempered steel, or other elastic substance; which, being wound up, serves to put several machines in motion by its elasticity: such is the spring of a clock, watch, &c.——*Spring*, in natural history, a fountain of water, or issue of water from the earth, or the basin of water at the place of its issue. From *springs* proceed rivulets, and rivulets united form rivers. Rain penetrates the ground, and oozes into and through certain strata, but, being obstructed by other strata, forms cavities and subterraneous reservoirs at various depths, many of which, when full, force their way out of the ground, and constitute springs.—The most simple manner of accounting for springs and their attendant phenomena, is that of comparing the action of the water beneath the surface of the earth to that of a portion of the same water contained in a convenient vessel, and in the midst of which a little heap or island of the same earth is placed. In making such an experiment, it will be found that the water, obedient to the laws of attraction, will rise through the pores of the earth. In nature we have only farther to suppose reservoirs into which this filtrated water is collected, and from which the surcharge flows.

SPRIT-SAIL, in vessels, a sail attached to a yard which hangs under the bowsprit. A small boom or pole which crosses the sail of a boat diagonally from the mast to the upper sternmost corner is termed a *sprit*.

SPRUCE, in botany, the *Pinus nigra*, or spruce-fir. Also, a fluid extracted from it by decoction. There are several varieties of the *spruce*, as the black, the white, and the red spruce, all growing in North America. The black spruce is a very useful and beautiful tree, often 70 or 80 feet in height.

SPRUCE-BEER, a cheap and wholesome liquor, made of treacle or molasses, and tinctured with the essence of *spruce*, well boiled in water and fermented.

SPURGE, in botany, a plant of the genus *Euphorbia*.—— *Spurge-laurel*, the *Daphne laureola*, a shrub.——*Spurge-olive*, the Mezereon, a shrub of the genus *Daphne*.

SQUAD'RON, in the art of war, a division or body of troops, which, among the ancients, was always square; whence its name.——*A squadron of ships*, a division or part of a fleet, employed on a particular expedition, and commanded by a vice or rear-admiral, or a commodore.

SQUA'LUS, in ichthyology, a genus of fishes of the order *cartilagines*, of many species. The fishes of this genus are never found in rivers or lakes, but inhabit only the sea, and carry terror and destruction wherever they appear. They are extremely rapacious of animal substances, and seize whatever they find with the most violent avidity. [See SHARK.]

SQUARE, in geometry, a quadrilateral figure, whose angles are right angles, and sides equal.——*Square*, in arithmetic, the product of any number multiplied by itself; also the squares of lineal measures, as a square foot, a square yard.——Among mechanics, an instrument for squaring their work or reducing it into a square.——In military affairs, a body of soldiers formed into a square.——*Square-root*, in arithmetic, a number which, multiplied in itself, produces the square number: thus, 2 is the square-root of 4.——*Square-rigged*, is said of a vessel when her principal sails are extended by yards suspended by the middle, and not by stays, gaffs, booms, and lateen yards. Thus a ship and a brig are square-rigged vessels.——*Square-sail*, a sail extended to a yard suspended by the middle.

SQUAR'ROUS, in botany, surfy, jagged, or full of scales. A *squarrous calyx* consists of scales very widely divaricating; a *squarrous leaf* is divided into shreds or jags, raised above the plane of the leaf, and not parallel to it.

SQUILL, in botany, a plant of the genus *Scilla*. It has a large, acrid, bulbous root, like an onion, which is used in medicine.——A crustaceous animal, or shell-fish, of the genus *Cancer*.——An insect so called from its resemblance to a crab, having a long body covered with a crust, the head broad and squat.

SQUIR'REL, in zoology, a small and very nimble animal of the genus *Sciurus*, order of *Glires*, and class *Mammalia*. There are several species; as the gray, the red, and the black squirrel. They have two cutting teeth in each jaw, four toes on the fore feet, and five on the hind feet. They subsist on nuts, of which they lay up a store for winter, in hollow trees or in the earth. They frequent woody places, and leap from branch to branch, among the trees, with wonderful agility.

STAC'TE, in chemistry, a fatty, resinous, and very odoriferous kind of gum, of the nature of liquid myrrh. It is very valuable when pure; but it is said we have none but



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for the sale of certain articles. The king's staple, as it was called, was formerly established in certain ports or towns in England, and certain goods could not be exported, without being first brought to these places to be rated and charged with the duty imposed on them. The principal commodities on which customs were levied, were wool, skins, and leather, which being called "*staple* commodities," the term in time was applied to the principal commodities produced by a country either for exportation or home consumption.——The word *staple* is also used to signify the thread or pile of wool, cotton, or flax; as, cotton is of a short, long, or fine *staple*.

STAR, a general name for any one of the heavenly bodies that appears at night, or when its light is not obscured by clouds or lost in the brighter effulgence of the sun; but more particularly for what are otherwise denominated *fixed stars*, as distinguished from planets, comets, satellites, &c. The principal points regarding the fixed stars, into which astronomy inquires, are—their distance; magnitude; number; nature; and motion. The magnitudes of the stars appear to be very different; but this variation is attributed to that of their distances. Those not reduced to classes, are called nebulous stars; being such as only appear faintly, in clusters, resembling little lucid *nebulæ*, or clouds. The number of the fixed stars cannot be reckoned. Dr. Herschel was enabled to count hundreds in the field of his telescope, and the milky way is an assemblage of an almost infinite number of stars, indistinct to the naked eye; but Herschel counted ten thousand in a square degree, the whole forming a vast cluster of stars in the space, of which our sun is one, and of which all the single stars visible are also parts; and it appears that space is filled with similar clusters or wonderful shoals of stars, which, to the unassisted eye, appear as luminous points, but viewed through telescopes display innumerable stars at such distances as infinitely outstep conception, and consequently leave no means for calculation. The ancient astrologers, for the sake of discriminating them, covered the visible sphere with imaginary figures, or constellations, in the parts and limbs of which the stars were classed, and then the names of the figures were given to them. The nature of the fixed stars is argued from several premises. It is demonstrated that they are larger than the earth; that they are farther distant from the earth than the most distant of the planets; and being more distant, and yet more luminous than Saturn, it should follow that they shine with their own light: hence it is concluded, that the fixed stars are *suns*. It is farther supposed that they are not smaller than the sun of our own system, and, like that, are the centres round which planets revolve; that is, that there are opaque bodies upon which their light shines. [See PLANET.]——*Star*, in heraldry, a charge frequently borne on the shield, which differs only from the mullet, in not being pierced.——*Star* is also a badge of honour, worn by the knights of the garter, &c.——In pyrotechny, a composition of combustible matter, which, exploding high in the air, exhibits the appearance of a real star.

STAR'-APPLE (genus *Chrysophyllum*), in botany, a globular or olive-shaped fleshy fruit, inclosing a stone of the same shape. It is grown in the warm climates of America, and is eaten by way of dessert.

STAR'BOARD, the right hand of a ship or boat, when looking towards the head or stem.

STAR'-CHAMBER, formerly, a court of criminal jurisdiction at Westminster, so called from its roof being ornamented with gilt stars. This court took upon itself to decide upon those cases of offence with regard to which the law was silent; and was in criminal matters what the exchequer is in civil. It passed judgment without the intervention of a jury. It differed from all other judiciary courts in this, that the latter were governed only by the common law, or immemorial custom, and acts of parliament; whereas the former often admitted for law the proclamations of the king in council. This court was abolished by stat. 16 Chas. I.

STAR'-FISH. [See ASTERIAS.]

STAR'-STONE, a kind of extraneous fossil, consisting of regular joints, each of which is of a radiated figure; *asteria*.

STAR'-WORT, in botany, a plant of the genus *Aster*, and another of the genus *Iridax*. The *yellow star-wort* is of the genus *Inula*.

STARCH, the fecula of flour, a glutinous substance, made by steeping wheat, or the refuse of wheat, in water; the floury viscous sediment being afterwards cleansed, and dried in an oven, or by the sun. The component parts of starch are oxygen, hydrogen, and carbon. Starch exists in a great number of vegetable substances, but chiefly in the roots and seeds, and particularly of those which are employed as food.

STAT'ICS, that branch of mathematics which treats of bodies *at rest*. Dynamics treats of bodies *in motion*. The science of statics comprehends,—1. All the doctrines of the excitement and propagation of pressure, through the parts of solid bodies, by which the energies of machines are produced. 2. Every circumstance which influences the stability of heavy bodies; the investigation and properties of the centre of gravity, the theory of the construction of arches, vaults, and domes; the attitudes of animals, &c. 3. The strength of materials, and the principles of construction, in every part of a machine, edifice, or structure of any kind. 4. The whole doctrine of the pressure of fluids, whether liquid or aeriform.

STA'TIONARY, in astronomy, an epithet applied to the appearance of a planet, when it seems to remain on the same point of the zodiac for several days. As the earth, from whence we behold the motions of the planets, is out of the centres of their orbits,

POTATO STARCH GOES MUCH FARTHER THAN WHEAT STARCH, A LESS QUANTITY BEING SUFFICIENT TO FORM A PASTE EQUALLY THICK.

STARCH, FROM WHATEVER SOURCE OBTAINED, IS A WHITE SOFT POWDER, WHICH FEELS CRISPY, AND IS DESTITUTE OF TASTE AND SMELL.



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same quantity of water will occupy a much greater space than one cubic foot, but its pressure will be diminished in a proportionate degree. On the other hand, when the water is made to boil under a greater pressure than that of the atmosphere, the steam formed will occupy a less space than one cubic foot, but will be possessed of a proportionately greater elastic force. Thus, suppose the pressure on the surface of the boiling water to be two atmospheres, or 30lbs. upon the square inch, then will the steam formed have a pressure of two atmospheres, but it will only occupy half a cubic foot. If it be allowed more space, it will expand and fill that space, but as it expands its pressure will be lessened. On the application of cold, steam instantly returns to the state of water, or, as it is termed, *condenses*, and thus forms a sudden vacuum. Upon this property, and upon its expansibility, depends its efficacy as a propeller of machinery; and it becomes a mechanical agent, at once the most powerful that can be conceived as well as the most manageable, as is seen in the vast and multiplied uses of that wonder-working engine, which, in a subsequent article, we have attempted to describe.

STEAM-ENGINE. The properties and effects of *steam* having been detailed above, our present object is to give a description of the *steam-engine*, with such an account of its rise, progress, and present state, as can be gleaned from the most authentic documents. Wonderful as are the powers of this mechanical contrivance; numerous as are the uses to which it is applied; and astounding as its influence must be on the state of society, whether considered as the great promoter of the peaceful arts, or in its probable destructive agency as a mighty implement of war, the steam engine in itself, as a piece of mechanism, without regard to its various applications and adaptations, is simple and intelligible. It is, in fact, only a pump, in which the fluid is made to impel the piston, instead of being impelled by it, that is to say, in which the fluid acts as the *power*, instead of being the *resistance*. It may be described simply as a strong barrel or cylinder, with a closely-filled piston in it, which is driven up and down by steam, admitted alternately above and below from a suitable boiler; while the end of the piston-rod, at which the whole force may be considered as concentrated, is connected in any convenient way with the work that is to be performed. The power of the engine is of course proportioned to the size or area of the piston, on which the steam acts with a force, according to the density of from 15 to 100 or more pounds to each square inch. In some of the Cornish mines, there are cylinders and pistons of more than 90 inches in diameter, on which the pressure of the steam equals the efforts of 600 horses.—The first idea of the steam-engine is found in the writings of that celebrated projector, the marquis of Worcester, who, in the year 1663, published a small tract, entitled "A Century of Inventions," consisting of short heads, or notices of schemes, many of them obviously impracticable, which at various times had suggested themselves to his very fertile and warm imagination. No contemporary record exists to illustrate or verify his description of the contrivance which we presume to call a *steam-engine*, or to inform us where, and in what manner, it was carried into effect; though it is evident, from his account, that he had actually constructed and worked a machine that raised water by steam. His description of the method is short and obscure, but inclines us to think the force of his engine was derived solely from the *elasticity* of steam; and that the *condensation* of steam by cold was no part of his contrivance. This last, we believe, was the invention of captain Savary, who, in 1696, published an account of his machine, in a small tract entitled "The Miner's Friend," having erected several engines previous to that period. In these engines the alternate condensation and pressure of the steam took place on the same vessel into which the water was first raised, from a lower reservoir, by the pressure of the atmosphere, and then expelled into a higher one by the elastic force of strong steam. Steam, it must be observed, was thus employed merely to produce a vacuum, and to supply the strength that was applied, for a like effect, to the sucker or piston of an ordinary pump; and it was a great step to have discovered a method of bringing the air to act in this manner by the application of heat to water, without the assistance of mechanical force. The next essential improvement was made by Newcomen, for which he obtained a patent in 1705. It consisted in separating the parts of the engine in which the steam was to act from those in which the water was to be raised; the weight of the atmosphere being employed only for the purpose of pressure, and the steam for that of first displacing the air, and then forming a vacuum by condensation. Newcomen was thus enabled to dispense with the use of steam of great and dangerous elasticity, to work with moderate heats, and to remove at least some part of the causes of wasteful and ineffectual condensation. To him we are indebted for the introduction of the steam cylinder and piston, and for their connection with the pump by means of the main lever, with its rods and chains: to which we might add several subordinate contrivances, which do great credit to his ingenuity. Still, however, the machine required the constant attendance of a man to open and shut the cocks at the proper intervals, for the alternate admission of steam and cold water; and although traditional report attributes the invention of the mechanism by which the engine was made to perform this work itself, to the ingenuity of an idle boy, it is well-known that the contrivance was first perfected by Mr. Henry Beighton, in 1717, who also improved the construction of several other parts of the engine. From this time, to the year 1764, there seems to have been no material im-

THE IDEA OF EMPLOYING STEAM AS A MOTIVE POWER, EVIDENTLY FIRST OCCURRED TO HERO OF ALEXANDRIA, ABOUT 40 B.C.

IN A BOOK BY VALTURIUS, PRINTED AT VERONA, IN 1472, A METHOD IS DESCRIBED OF PROPELLING VESSELS BY MEANS OF PADDLES OR WHEELS.



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FOR OUNCES OF WATER WILL, IN A SECOND, CONDENSE TWO HUNDRED PEST OF STEAM, AND REDUCE THEIR EXPANSIVE FORCE TO ONE-FIFTH.

most fatal accidents have occasionally resulted either from imperfections in *the boiler*, or from the neglect or mismanagement of the persons whose duty it is to attend to it, a few words on this fundamental part of the steam-engine are indispensable. If more steam be generated, at a given rate of speed, than is requisite for that speed, the boiler being overcharged will burst; unless some provision be made to guard against such a consequence. Accordingly several appendages, by way of precaution, are attached to it. The first of these is the *safety-valve*, which allows the escape of any superfluity of vapour. There is also the *self-acting damper*, which is so adjusted to the engine, that it will either descend and check the heat of the furnace, or rise and thereby increase the draught; and the self-acting *feeding-pipe*, the use of which is also to regulate the heat in the boiler, and to prevent the metal being burnt and destroyed by the immoderate action of the fire. *Gauge-cocks* are also provided, by the means of which the engineer has it always in his power to ascertain the state of his boiler, and whether or not the self-acting damper is properly performing its duty. To these may be added, the introduction of cylindrical boilers and serpentine tubes, by which increased safety, considerable space, a great saving of fuel, and an accession of power have been obtained. From what has before been said, it will appear that in high pressure engines the steam is not condensed; but after having acted on the piston, is allowed to blow off into the air; whereas, in low pressure engines it passes into a separate vessel, where it is condensed; on which account, and for other reasons, low pressure engines do not suit a rail-road. High pressure engines occupy less room, require less fuel than low pressure engines, and their power can be increased on emergencies, by merely increasing the fire: but the risk of explosion is thereby very considerably increased.—To describe the various applications of steam power would far exceed our limits: but, if we except its adaptation to the motion of carriages, perhaps few of its effects are more astounding than in the manufacture of iron. Thus there are factories where this resistless power is seen, with its mechanic claws, seizing masses of iron, and in a few minutes delivering them out again pressed into thin sheets, or cut into bars and ribbons, as if the iron had become soft, like clay in the hands of the potter. Well, indeed, may it be said, that "the steam-engine has infinitely increased the mass of human comforts, and rendered cheap and accessible all over the world the materials of wealth and prosperity. It has armed the feeble hand of man, in short, with a power to which no limits can be assigned; completed the dominion of mind over the most refractory qualities of matter; and laid a sure foundation for all those future miracles of mechanical power which are to add to and reward the labours of after generations. Already it has become a thing alike stupendous for its force and its flexibility. The trunk of an elephant that can pick up a pin, or rend an oak, is nothing to it. It can engrave a seal, and crush masses of obdurate materials like wax before it: draw out, without breaking, a thread as fine as gossamer, and lift a ship of war like a bauble in the air. It can embroider muslin and forge anchors; cut steel into ribbons; and impel loaded vessels against the fury of the winds and the waves." This, and far more than this, is strictly true; and to what is it all owing but to the genius and perseverance of James Watt! Surely, then, we cannot more appropriately conclude this article, than by quoting a portion of the speech which M. Arago, the secretary to the Royal Academy of Sciences in France, addressed to the members of that institution, in admiration of our illustrious countryman: "Gentlemen," said he, "this creator of six or eight millions of workmen—of workmen indefatigable and industrious among whom the arm of authority is never called upon to interpose for the suppression of revolt: this man, who, by his brilliant inventions, conferred upon England the means of sustaining itself during a political convulsion, where its very existence, as a nation, was endangered: this modern Archimedes, this benefactor of the whole human race, whose memory future generations will eternally bless—what was done to heap honour upon this man? The peerage is in England the first of dignities, the highest of national rewards. You will naturally suppose that Mr. Watt was at least elevated to the highest rank in the peerage! Such a thing was never even thought of." "Futurity will behold Watt appear before the grand jury of the inhabitants of the two hemispheres,—they will see him penetrating, with the aid of his mighty machine, into the bowels of the earth, in the short period of a few weeks, to the depths where, before his time, it would have required a century of painful labour to arrive—and there opening up spacious galleries and mines, clearing them in a few minutes of the immense volumes of water that encumber them, and snatching from virgin earth the boundless mineral wealth deposited there by bountiful nature. Uniting delicacy with power, he will be seen twisting with equal success the immense folds of the gigantic cable, by which the ship of the line embraces in safety her anchor in the midst of the tumultuous tossing waves; and the microscopic filaments of the delicate muslins and the aerial lace, which float on the zephyrs of fashion. A few oscillations of the same machine will bring into culture extensive swamps; and fertile countries will be rescued from the periodic and deadly miasmata raised up by the burning heats of a summer sun. Population, well fed, well clothed, well warmed, increasing with rapidity, is fast covering with elegant mansions the surface of countries, formerly the deserts of the world, and which eternal barrenness appeared to condemn to the dominion of beasts of prey. In a few years,

PLUGS EXPAND BY HEAT; THUS A VESSEL WHICH HAS BEEN FILLED WITH WARM LIQUID, WILL NOT BE FULL WHEN IT HAS COOLED.



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what are now but hamlets, will become important cities: in a few years, towns such as Birmingham—where already one reckons three hundred streets—will take rank as the largest, most beautiful, and wealthiest cities of a powerful kingdom. Transferred to our ships, the steam-engine will replace an hundred-fold the power of triple and quadruple ranks of rowers, from whom our forefathers exacted a labour reckoned among the severest punishments of the most atrocious criminals. The steam-engine, in conclusion, drawing in its train thousands of travellers, will traverse the railway with far greater velocity than the best race-horse loaded only with his pigmy jockey!"

STEAM NAVIGATION. One of the greatest triumphs of art, and perhaps in its future consequences the most important invention of any age, is the application of steam to the purposes of navigation. It is common to ascribe this to Robert Fulton, an American engineer; but although, like Watt, he perfected that which was before scarcely applied to any useful purpose, we are bound to trace its origin to an earlier date, and, in so doing, we shall show the real claims of Fulton. So long ago as December, 1736, a patent for a steam-boat was taken out by Jonathan Hull; and a description, with a drawing, published in a pamphlet, in 1737, under the title of "A description and draught of a new invented machine for carrying vessels or ships out of or into harbour, port, or river, against wind or tide, or in a calm." It would, however, appear that, from want of encouragement, the steam-boat was never actually constructed. About twenty years after this, two Americans, named John Ramsey and John Fitch, claimed the honour of inventing steam-boats, as also did Thomas Paine, but none of their plans were ever brought into practice. According to the following version, which has been given with evident proofs of its genuineness, the first steam-boat ever known to succeed was the invention of two Scotchmen, Mr. Miller of Dalswinton, and the tutor of his family, Mr. James Taylor; the former being the first to suggest the application of paddle-wheels in the propelling of vessels, and the latter to suggest the employment of steam as the moving power of these wheels. So far back as the year 1788, they constructed a boat on this principle, the engine of which was made by Mr. Symington, then a young engineer in Edinburgh. Experiments were made with this boat on the lake of Dalswinton, Dumfrieshire, which proved highly satisfactory, the vessels being driven at the rate of five miles an hour. The same gentleman, in the following year, constructed, at the Carron foundry, a larger vessel, which was tried on the Forth and Clyde canal in November and December, 1789, and went at the rate of seven miles an hour. Soon after this, a misunderstanding arose between Messrs. Miller and Taylor, and the prosecution of the invention was by them for some time neglected. Mr. Symington, the engineer, meanwhile, did not abandon the project. Having commenced business at Falkirk, he, in 1801, built another experimental steam-vessel, which was also tried with success on the Forth and Clyde canal, but was interdicted by the canal company, on account of its motion destroying the banks. This vessel, which lay at Lock Sixteen, was inspected by Mr. Fulton, accompanied by Mr. H. Bell of Glasgow, when on a visit to the Carron works; and the consequence was, that in 1807 Mr. Fulton launched a steam-vessel on the Hudson, and, in 1812, Mr. Bell another upon the Clyde, being respectively the first vessels of the kind used for the service of the public in the new and old hemispheres. But Mr. Fulton met with all the obstacles common to new undertakings; for while he was building his first steam-boat at New York, the project was viewed by the public either with indifference, or with contempt, as a visionary scheme. "Never," to use his own words, "did a single encouraging remark, a bright hope, a warm wish, cross my path. Silence itself was but politeness, veiling its doubts or hiding its reproaches. At length the day arrived when the experiment was to be put into operation. To me it was a most trying and interesting occasion. I invited many friends to go on board to witness the first successful trip. Many of them did me the favour to attend, as a matter of personal respect; but it was manifest they did it with reluctance, fearing to be the partners of my mortification, and not of my triumph. I was well aware, that in my case there were many reasons to doubt of my own success. The machinery was new and ill-made; many parts of it were constructed by mechanics unaccustomed to such work; and unexpected difficulties might reasonably be presumed to present themselves from other causes. The moment arrived in which the word was to be given for the vessel to move. My friends were in groups on the deck. There was anxiety mixed with fear among them. They were silent, and sad, and weary. I read in their looks nothing but disaster, and almost repented of my efforts. The signal was given, and the boat moved on a short distance, and then stopped and became immovable. To the silence of the preceding moment now succeeded murmurs of discontent, and agitations, and whispers, and shrugs. I could hear distinctly repeated, 'I told you it would be so—it is a foolish scheme—I wish we were well out of it.' I elevated myself upon a platform, and addressed the assembly. I stated that I knew not what was the matter; but if they would be quiet and indulge me for half an hour, I would either go on or abandon the voyage for that time. This short respite was conceded without objection. I went below and examined the machinery, and discovered that the cause was a slight malformation of some of the work. In a short period it was obviated. The boat was put again in motion. She continued to move on. All were still incredulous. None seemed willing to trust the evidence of their own senses.



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IN A STEAM-ENGINE, EVERY NINETEEN CUBIC INCHES OF WATER PRODUCES TWENTY FEET OF STEAM EFFECTED BY A QUARTER OF A POUND OF COAL.

HYDROGEN IS EXPLODED BY A BURNING BODY, WHEN TWO PARTS ARE MIXED WITH TEN OR TWELVE OF AIR, OR WITH ONE OF OXYGEN.

STEARIC ACID HAS NO ACTION UPON AN INFUSION OF LITMUS WHEN COLD, BUT WHEN HOT CHANGES ITS BLUE COLOUR TO RED.

pump; so that a regular current of cold water flows incessantly through among the tubes. By means of this apparatus, in fact, no waste of the water originally introduced into the boilers can take place, but what arises from leakage; so that if the boilers be filled with pure water, it may be worked for any length of time. The advantages of Hall's patent steam condensers are now fully established; and it is pretty generally admitted that it matters not how hard the wind blows, or how heavy the sea rolls, the same uniform power is maintained as in a calm; and while common engines, under similar circumstances, cannot keep up the vacuum to a higher point than from 20 to 25 inches, the patent engines obtain a steady vacuum of from 29 to 29¾ inches.——With the following account of the *Archimedean* steamer, built upon an entirely new principle, and launched from the yard of Mr. Wynn of Mill-wall, we must conclude: The engine is placed amid-ships, as in other steam-vessels, and the propeller, or paddle, which is under the stern, is worked by a communicating shaft, acting upon "the screw of Archimedes," in the application or use of which the invention is grounded. The propeller being placed under the stern, the inconvenience arising from paddles, which act themselves as a backwater, is avoided; and great benefit is derived in seas when the wind is on the beam, when, instead of a great portion of the power being lost, as before, the paddle works as effectually as in calm weather. Should it be desirable to remove the steam-power, the same may be immediately unshipped, and its action may be stopped, and sailing power substituted. The dimensions of this vessel are:—extreme length, fore and aft, 125 ft.; length between perpendiculars 107 ft.; breadth of beam 22 ft. 6 in.; depth of hold 13 ft.; diameter of screw 7 ft.; length of screw 8 ft; engines of 45 horse power.

STEAM-GUN. Many of our readers must have seen Perkins's Steam-gun exhibited at the "Gallery of Practical Science" in the Strand. It discharges a current of fifty balls in two seconds, against an iron target, and can be re-charged in as many more, propelling the balls either singly or in volleys, so that it is possible to discharge 420 balls in a minute, or 25,200 balls in an hour. The steam-gun, as will be seen, has been regarded as likely to become a mighty instrument of human butchery; it is not, however, as an engine of war alone that it deserves attention, but as a proof of the extraordinary power of the high pressure of steam, and of the ease with which it can be obtained. As early as 1806, the French general Chasseloup is said to have shown the possibility of preparing steam artillery. In 1814, a French engineer constructed ordnance of this sort: the generator furnishing steam for six pieces of artillery, while the turning of a cock supplied all the pieces at once with the balls and steam: this machine could make 150 discharges in a minute. But a still more extraordinary application of steam power to artillery is described by the inventor, Jacob Perkins, in a letter to the editor of the *Franklin Journal*, dated March 8, 1827:—"I am now engaged," says he, "in building steam artillery as well as musketry, for the French government. The piece of ordnance is to throw sixty balls, of four pounds each, in a minute, with the correctness of the rifled musket, and to a proportionate distance. A musket is also attached to the same generator, for throwing a stream of lead from the bastion of a fort, and is made so far portable as to be capable of being moved from one bastion to another. The musket is to throw from one hundred to one thousand bullets per minute, as occasion may require, and that for any given length of time. I am within the truth when I say that, if the discharges are rapid, one pound of coals will throw as many balls as four pounds of powder."

STEAR'IC ACID, or STEARINE, is the solid constituent of tallow, olive oil, and other unctuous substances, converted into a crystaline mass by saponification with alkaline matter, and abstraction of the alkali by an acid. By this process three acids, called *stearic*, *margaric*, and *oleic*, are produced. The *stearine* used by the manufacturers, is obtained from the St. Petersburgh or Odessa tallow, although it is sometimes used when procured from vegetable oils. It is converted into stearic acid by boiling it with one part of quicklime to eight of stearine, and afterwards separating it by sulphuric acid. It is further cleansed from oleic acid, which is present, by congealing it, and subjecting it to pressure. The stearic acid thus procured is not quite pure; it is again and again washed with a weak acid, and the same process is repeated, to abstract from it whatever oleic acid may remain behind. The pure stearic acid is semi-transparent, has a waxy appearance, and closely resembles spermaceti. It is melted in a silver pan, because other metals would colour it; when at a proper temperature, it is poured into the moulds, and forms a candle closely resembling one made with wax. If the temperature be raised too high, the acid crystalizes, and becomes brittle; two qualities by which it is rendered nearly unsaleable, but which may be prevented by the addition of a little wax, magnesia, or French chalk. Manufacturers, however, had recourse to a very pernicious practice, employing white arsenic to prevent this brittleness. At first, a very small quantity was used—viz. one-eighth of a grain in a candle; but after a time it was much increased, eight ounces being added to the cwt.; however, since the investigation that has taken place, and since the publication of the various facts relative to the employment of this poison, manufacturers have almost entirely ceased to make use of it, so that the expression of public opinion has, in this instance, been of service.

STE'ATITE, in mineralogy, a sub-species of rhomboidal mica. It is a compact stone, white, green, gray, brown or marbled. It is found in metalliferous veins,

STEARIC, AMONG OTHER USES, IS DUSTED IN POWDER UPON THE INSIDE OF MOULDS, TO MAKE THE WAX GLIDE EASILY INTO THEM.

with the ores of copper, lead, zinc, silver, and tin. It is sometimes called *soap-stone*, from the magnesia which it contains making it soft, and apparently unctuous to the touch. It is used in the manufacture of porcelain, and for taking greasy spots out of silk and woollen stuffs; it is also employed in polishing gypsum, serpentine, and marble. When pounded, and slightly burned, it forms the basis of certain cosmetics; and among the more useful applications of steatite is that of diminishing the friction of machinery. Humboldt assures us that the Otomacks, a savage race on the banks of the Orinoco, live for nearly three months of the year on a kind of potter's clay; and many other savages eat great quantities of steatite, although it contains no sort of nourishment.

STEEL, iron combined with a small portion of carbon. Iron, on being made into steel, becomes harder than any other metal. It is tempered, or hardened, by plunging it, when hot, into cold water. If heated, and not subsequently plunged into water, it remains soft; but when refined and hardened, it is admirably fitted for the making of superior edge-tools. Steel may be made three hundred times dearer than standard gold, weight for weight; six steel wire-springs for watch pendulums weigh one grain, to the artists, 7*s.* 6*d.* each, equal to 2*l.* 5*s.*; one grain of gold being of 2*d.* value.——The *natural steel*, or *German steel*, is an impure and variable kind of steel, procured from cast-iron, or obtained at once from the ore. It has the property of being easily welded, either to iron or to itself. Its grain is unequally granular; its colour usually blue; and it acquires only a middling hardness. The natural steel, yielded by cast-iron, manufactured in the refining houses, is known by the general name of *furnace steel*; and that which has only been once treated with a refining furnace, is particularly called *rough steel*. The best cast-iron for the purpose of making natural steel, is that obtained from the brown hæmatite, or from the sparry iron ore.

STEEL'YARD, or Roman balance, in mechanics, a balance by which the gravities of different bodies are found, with the assistance of a single weight. It consists of a rod or bar marked with notches, designating the number of pounds and ounces, and a weight which is movable along this bar, and which is made to balance the weight of the body by being removed at a proper distance from the fulcrum.

STEER'AGE, in a ship of war, an apartment before the bulk-head of the great cabin, where the steersman stands. Also an apartment in the forepart of a ship for passengers.——*Steerage-way*, that degree of progressive movement of a ship, which renders her governable by the helm.——*Steersman*, the man at the helm employed to regulate the ship's course.

STEGNOT'ICS, medicines proper to stop the orifices of the vessels or emunctories of the body, when relaxed or lacerated.

STEIN'HEILLITE, in mineralogy, a variety of iolite.

STEL'ECHITE, a fine kind of storax.

STELLATÆ, the 47th Linnæan natural order of plants, with leaves disposed round the stem in a star-like form.

STEL'LATE, or STEL'LATED, in botany, an epithet used when more leaves than two surround the stem in a whorl, or when they radiate like a star. A *stellate bristle* is when a little star of smaller hairs is affixed to the end. A *stellate flower* is a radiate flower.

STEM, in botany, that part of a plant which sustains the root, leaves, and flower. The main stock, or firm part which supports the branches.——*Stem*, in ship-building, the circular piece of timber into which the two sides of the ship are united at the fore-end; the fore part of the ship, as opposed to the stern.——*From stem to stern*, from one end of the ship to the other.

STEM'PLES, in mining, cross bars of wood in the shafts of a mine.

STEN'CILLING, a method of painting on walls with a stencil, so as to imitate the figures on paper hangings.

STENOG'RAPHY, the art of writing in short-hand, by using abbreviations or characters for whole words. Some systems are replete with unmeaning symbols and ill-judged contractions; while others are too prolix, by containing a multiplicity of characters, and those characters not simple or easily remembered. No system of arbitrary signs, in fact, however scientific, can, without extensive practice, be of much use to the student; and it is not therefore surprising that many of our most expert reporters neglect or abandon the study of it altogether.

STENTO'RIAN [from *Stentor*, a herald in Homer, whose voice was as loud as the united voices of fifty other men], able to utter a very loud sound. The word *stentorophonic* is also sometimes, though rarely, used.

STEPPES, in Russia, an uncultivated tract of land or desert of great extent.

STEREOG'RAPHY, the art of drawing the forms and figures of solids upon a plane.

STEREOM'ETRY, that part of geometry which teaches the art of measuring solids, or ascertaining the solid contents of bodies.

STEREOT'OMY, the science or art of cutting solids into certain figures or sections; as walls or other members in the profiles of architecture.

STE'REOTYPE, an entire solid plate or piece of type cast from an impression in gypsum of a page composed with movable types. Thus we say, a book is printed on stereotype, or *in* stereotype. In the latter use, the word seems rather to signify the workmanship, or manner of printing, than the plate. [See PRINTING.]

STER'LING, in English commerce, a term which is applied to money, signifying that it is of the fixed, or standard, national value; thus, "a pound sterling" is not indefinitely "a pound," but "an Eng-

PERUVIAN STEEL IS AN ALLOY OF STEEL WITH CERTAIN PORTIONS OF OTHER METALS FROM PERU, WHICH RENDER IT HARDER.

TO PRESERVE IRON FROM RUST, DIP IT, WHEN AT A DULL RED HEAT, INTO WATER, AND THEN INTO LINSEED OIL, TO FORM A VARNISH.



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THE COURT OF THE LORD HIGH STEWARD OF GREAT BRITAIN WAS INSTITUTED FOR THE TRIAL OF PEERS INDICTED FOR TREASON, &c.

lish pound." Camden appears to offer the true etymology of this word, when he derives it from *easterling*, and corroborates, if not demonstrates, the propriety of this suggestion, by quoting old deeds, where English coin is always called *nummi easterlingi*. In explanation, he observes, that in the reign of Richard I. money coined in the eastern part of Germany grew to be much esteemed in England, on account of its purity: this money was called *easterling* money, as all the people of those parts were called easterlings; and in consequence of the partiality related, some of the *easterling* coiners were invited into this kingdom, to perfect its coinage, which was thenceforward denominated *easterling*, *esterling*, or *sterling*. During a considerable period, the only coin in England was one of about the value of a penny: whence it happens, that many ancient writers use the word *easterling* as a substantive, and synonymously with *penny*.——The word *sterling* has also a more general application. We speak of *sterling* value, *sterling* worth, or *sterling* wit; thereby meaning genuine and of good quality.

STERN, the hind part of a ship or other vessel.——*Stern-chase*, a cannon placed in a ship's stern, pointed backward, and intended to annoy a ship that is in pursuit of her.——*Stern-frame*, the several pieces of timber which form the stern of a ship.——*Stern-post*, a straight piece of timber, erected on the extremity of the keel to support the rudder, and terminate the ship behind.

STER'NUM, in anatomy, the *os pectoris*, or breast-bone, a cartilaginous bone which composes the fore-part of the breast, and into which the ribs are fitted; forming the front of the human chest from the neck to the stomach.

STERTOR, a noisy kind of respiration, such as is observed in cases of apoplexy; loud snoring or snorting.

STETHI'OSCOPE, in medicine, a tubular instrument for discovering, by auscultation, the minutest variations from the healthy standard. This is done by the physician applying the stethoscope to the chest or abdomen of a patient, and putting the ear to the narrow end. This useful instrument was invented by Laennec, in the 18th century, and improved by Dr. Forbes.

STEW'ARD, a man employed in great families to superintend the household generally, to collect the rents or income, keep the accounts, &c. A steward is always a principal officer within his jurisdiction.—The greatest officer under the crown is the *lord high steward of England*, an office that was anciently the inheritance of the earls of Leicester, till forfeited by Simon de Mountfort, to king Henry III. But the power of this officer is so very great, that it has not been judged safe to trust it any longer in the hands of a subject, excepting only *pro hac vice*, occasionally; as to officiate at a coronation, at the arraignment of a nobleman for high treason, or on other solemn occasions. During his office, the steward bears a white staff in his hand, and on the trial, &c. being ended, he breaks the staff, and with it his commission expires.—There is likewise a lord steward of the royal household, who is the chief officer of the court, &c.——In colleges, an officer who provides food for the students, and superintends the concerns of the kitchen.——In a ship of war, an officer who is appointed by the purser to distribute provisions to the officers and crew.—In other ships, a man who superintends the provisions and liquors, and supplies the table.

STHE'NIC, in medicine, an epithet applied to diseases in general which arise from excessive excitement; the opposite of *asthenic* diseases, or such as arise from debility.

STICK'LE-BACK, in ichthyology, a small fish of the genus *Gasterosteus*, of several species. The common species seldom grows to the length of two inches.

STIG'MA, in botany, the top of the pistil where the pollen is received. It is moist and pubescent, to detain and burst the prolific powder.

STIGMA'TA, the pores in insects through which air is respired.——*Stigmata*, in antiquity, certain marks impressed on the left shoulders of the soldiers when enlisted.——*Stigmata* were also a kind of notes or abbreviations, consisting only of points disposed various ways, as in triangles, squares, crosses, &c.

STIG'MATIZING, in antiquity, the act of affixing a mark upon slaves, sometimes as a punishment, but more usually in order to know them. It was done by applying a red-hot iron, marked with certain letters, to their foreheads, till a fair impression was made, and then pouring ink into the furrows, that the inscription might be the more conspicuous. *Stigmatizing*, among some nations, was, however, looked upon as a distinguishing mark of honour and nobility.

STIL'BITE, a mineral of a shining pearly lustre, and a whitish or gray colour. It has sometimes been called foliated zeolite or radiated zeolite.

STILL, a chemical apparatus for vaporizing compound fluids, and re-condensing the vapours of each of the component parts as they are successively raised by heat. It consists of an alembic, a worm, a refrigerator, and a receiver.

STILPNOSID'ERITE, a mineral of a brownish black colour, massive, in curving concretions, splendent and resinous.

STIM'ULANT, in medicine, an epithet for whatever excites and increases the action of the moving fibres or organs of an animal body.——*To stimulate*, in a general sense, is to rouse or animate to action by some powerful motive. In a medical sense, to excite or increase bodily action; as to *stimulate* a torpid limb; or to *stimulate* the stomach and bowels.

STIM'ULUS, any medicine or aliment which increases or excites the energy of an animal.——In a general sense, that which rouses the mind or spirits; as, the hope of

PRISONERS OF WAR WERE FORMERLY "STIGMATISED," OR BRANDED WITH A HOT IRON, AS THE SLAVE TRADERS BRAND THE NEGROES.



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ON BUYING AND SELLING STOCK, YOU MERELY TRANSFER THE NAME.



IN BUYING STOCKS IN ENGLAND, THE PURCHASER DOES NOT RECEIVE ANY CERTIFICATE, BUT HIS NAME IS ENTERED ON THE BOOKS.

gain is a powerful *stimulus* to labour and action.

STING, a barbed spear, projected by many insects in defence from real or supposed dangers. In most instances, this instrument is a tube, through which a poisonous matter is discharged, which inflames the flesh, and in some instances proves fatal.

STIPEN'DIARY, one who performs services for a settled compensation, or stipend, either by the day, month, or year.

STI'PES, or STIPE, in botany, a species of stem passing into leaves, or not distinct from the leaf. The stem of a fungus is also called a *stipe*. The word is also used for the filament or slender stalk which supports the pappus or down, and connects it with the seed.

STIPI'TATE, in botany, supported by or elevated on a stipe.

STIP'PLING, in the arts, a method of engraving in dots, as distinguished from *etching* in lines. [See ENGRAVING.]

STIPULA'TION, a contract or bargain; as, the *stipulations* of the allied powers to furnish each his contingent of troops.

STIP'ULE, or STIP'ULA, in botany, a scale situate at the base of nascent petioles or peduncles: stipules are in pairs or solitary.

STIR'RUP, in ship-building, a piece of timber put under the keel when some part of it is lost.——*Stirrups*, in a ship, short ropes, having their upper ends plaited, and nailed round the yards, and eyes made in their lower ends, through which the horses are reeved, to keep them parallel to the yards.

STI'VER, a Dutch coin, equal to about a halfpenny in value.

STO'Æ, in antiquity, porticos in Athens, which were the resort of philosophers, particularly the Stoics.

STOAT, in zoology, a sort of weasel; a variety of the ermine: the *Mustela erminea* of Linnæus.

STOCK, in commerce, any fund consisting of money or goods employed by a person in trade, particularly the sum of money raised by a company for carrying on any trading concern.——*Stock* is a general name for the capitals of our trading companies. It is a word also that denotes any sum of money which has been lent to government, on condition of receiving a certain interest till the money is repaid. Hence the price of stocks, or rates per cent., are the several sums for which 100*l.* of those respective stocks sell at any given time. The denominations of the existing stocks are, three per cent. consols, three per cent. reduced, three-and-a-half per cent. reduced, four per cent. 1826, three-and-a-half per cent. 1818, three per cent. 1726, and long annuities. The three per cent. consolidated annuities and the three per cent. reduced, always bear a greater price, and the purchases in them are more readily made than in the other stocks or funds.——*Stock*, the wooden part of many instruments, as the *stock* of an anchor, the *stock* of a gun, &c.——*Stock*, in agriculture, the domestic animals or beasts belonging to the owner of a farm; as a *stock* of cattle or of sheep. Cattle are also called *live stock*.——*Stocks* (plur.), a machine consisting of two pieces of timber, in which the legs of criminals are confined by way of punishment.——*Stocks*, the frame or timbers on which a ship rests while building. Hence we say, "a ship is *on the stocks*."

STOCK'-BROKER, one who deals in the purchase and sale of stocks or shares in the public funds, for others.

STOCK'-DOVE *(Columba œnas)*, in ornithology, the wild pigeon of Europe, long considered as the *stock* of the domestic pigeon, but now regarded as a distinct species.

STOCK'-EXCHANGE, the place or building where the public stock is bought and sold. The *Stock-exchange*, situated in Capel-court, was opened in 1802. Formerly the place of rendezvous for persons transacting business in the stocks, was Jonathan's coffee-house, in 'Change-alley, Cornhill, and it is from this circumstance that the expression *Alley* is familiarly used, as a cant phrase for the stock-exchange, and that a petty speculator in the funds is styled a "dabbler in the alley." [See EXCHANGE.]

STOCK'-JOBBER, one who speculates in the prices of annuities, from day to day, or by anticipation for future time: a desperate species of gambling, by which thousands are annually ruined.——*Stock-holder*, one who is a proprietor in the public funds, or in the funds of a bank or other company.

STOCK'INGS, a species of tissue, extremely elastic, and readily adapting itself to the limbs it is designed to cover. They are made either of silk, wool, cotton, or thread, &c. knit by the hand or woven in a frame. Silk stockings were first worn by Henry II. of France, 1547. Howell says, "that, in 1560, queen Elizabeth was presented with a pair of black silk knit stockings by her silk-woman, Mrs. Montague, and she ever wore cloth ones any more." He adds, "that Henry VIII., that magnificent and expensive prince, wore ordinarily cloth hose, except there came from Spain, by great chance, a pair of silk stockings for gala-days." The English and French have often contested the honour of inventing the stocking-frame; but whatever pretensions the French may suppose they have to it, this honour was certainly due to Mr. W. Lee, of Woodborough, Nottinghamshire. He attempted to set up an establishment at Calverton, near Nottingham, but instead of meeting with that success to which his genius and inventions so well entitled him, he was discouraged and discountenanced. Being, however, invited by Henry IV. of France, who promised him a magnificent reward if he would carry his machinery to that country, he settled at Rouen, where he introduced the stocking-frame with distinguished success; but after the assassination of the king, the concern got into difficulties, and Lee died in poverty at Paris.

ANGOLA STOCKINGS COMBINE WORSTED AND COTTON IN THE CLOSEST INTERMIXTURE, AND ARE THEREBY RENDERED WARMER THAN OTHERS.



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ANCIENT EDIFICES PLAINLY SHOW THAT THE STONE THEY USED WAS INFINITELY MORE DURABLE THAN WHAT IS USED AT PRESENT.

Some of the workmen who had emigrated with him, returned to England, and established themselves in Nottinghamshire, which still continues the principal seat of the manufacture. During the course of the last century the machine has been very greatly improved.

STO'ICS, in antiquity, a sect of philosophers amongst the Greeks, whose founder was Zeno. They denied the existence of innate ideas, and consequently held that sensation and reflection were the only foundations of human knowledge. They taught that the true end of man consists in living conformably to nature, and in obedience to his internal monitor, that particle of the divinity which constitutes the soul. They taught that good is what conducts men to felicity, and that all good things are equal; that passions arise from false judgments; that duty consists in the investigation of moral truth, and in living agreeably to the obvious destination of our nature. They had also paradoxes peculiar to themselves, asserting that pain is no evil; that a wise man is free from all perturbation of mind; and that it is the duty of man to submit without complaint to the unavoidable necessity imposed on him by his destiny. [See PHILOSOPHY.]

STO'LA, in antiquity, a long robe in use among the Roman ladies, over which they wore a large mantle, or cloak, called the *pallium*. —— Also a sacerdotal-ornament worn by the Romish parish priests over their surplice, as a mark of superiority in their respective churches; and by other priests over the alb, while celebrating mass.

STOM'ACH, in anatomy, a hollow membranous receptacle, situated in the epigastric region, immediately under the diaphragm, and obliquely between the liver and the spleen; the superior orifice of which is termed the *cardia*, and the inferior the *pylorus*. The use of the stomach is for the digestion of our food; that is, to receive, contain, dissolve, and change what is swallowed; and after a sufficient concoction, to expel it through the pylorus into the intestines. It is also the organ in which the sensation of hunger resides.

STOMACH'ICS, medicines which excite the action and strengthen the tone of the stomach.

STOM'ACH-PUMP, a small pump lately introduced into medical practice, for removing poisons from the stomach. It resembles the common small syringe, except that there are two apertures near the end, instead of one, which, owing to valves in them opening different ways, become what are called a *sucking* and a *forcing* passage. When the object is to extract from the stomach, the pump is worked while its sucking orifice is in connexion with an elastic tube passed into the stomach; and the discharged matter escapes by the forcing orifice. When it is desired, on the contrary, to inject water or other liquid into the stomach, the connexion of the apertures is reversed.

STONE, in mensuration, a quantity or weight used in measuring various commodities, and of which the amount itself is various.

STO'NE-CROP, in botany, a plant of the genus *Sedum*; wall-pepper. The stone-crop tree or shrubby glass-wort is of the genus *Chenopodium*.

STO'NE-FRUIT, in botany, a *drupe*, or those kinds of which the seed or kernel is enclosed in a hard case, covered with pulp, as cherries, plums, &c.

STO'NEHENGE, in English topography, the remains of a public structure of the ancient Britons, still extant upon Salisbury plain. It consists of many unhewn stones, which, with some that are wanting, appear to have originally composed four ranks, one within another. Some of them, especially in the outermost and the third ranks, are twenty feet high and seven broad. The vertical stones sustain horizontal ones, laid across their heads, and fastened by mortises. The whole is supposed to have been once joined together. The purpose of a place of this description, among the generations which, two thousand years ago, peopled the island of Britain, and were not so barbarous or inconsiderable as is commonly supposed, and as the vanity and superior refinement of the Romans contribute to represent, seems to have been that of religious worship. What that religion was can only be conjectured; but judging of these ruins by their similarity to the huge remains of buildings still existing in Egypt,—as well as from the circumstance that the heads and horns of oxen and other animals have been found buried in the spot,—it has been thought that the rites peculiar to solar worship were there performed; and, consequently, that Stonehenge was once a temple of Baal.

STONES, in natural history, are defined to be essentially compound fossils; found in continued strata, or beds, of great extent; formed either of congeries of small particles, in some degree resembling sand, and lodged in a smoother cementitious matter, both of these running together into one smooth mass; or, finally, of granules cohering by contact, without any cementitious matter among them; or composed of crystal or spar, usually debased by earth, and often mixed with talc and other extraneous particles. The principal component parts of stones are silex, alumina, zircona, glucina, lime, and magnesia: sometimes the oxydes of iron, manganese, nickel, chromium, and copper, are also found to enter into their composition. In popular language, very large masses of concretions are called *rocks*; and very small concretions are universally called *gravel* or *sand*. Stones are of various degrees of hardness and weight; they are brittle and fusible, but not malleable, ductile, or soluble in water. They are of great and extensive use in the construction of buildings of all kinds. When we speak of the substance generally, we use *stone* in the singular, as, a house or wall of stone. But speaking of particular separate masses, we say *a stone*, or *the stones*. [See ROCKS.]

STONE WHICH ABOUNDS WITH CLAY, OR ALUMINE, ABSORBS SO MUCH MOISTURE, THAT IT RAPIDLY GOES TO DECAY.



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STO'RAX, a resinous and odoriferous drug, or solid balsam, of a reddish brown colour. It is obtained from the *Styrax officinalis*, a tree which grows in the Levant. *Liquid storax*, or *styrax*, is a liquid or semi-fluid balsam, said to be obtained from the *Liquid amber styraciflua*, a tree which grows in Virginia. It is greenish, of an aromatic taste, and agreeable smell.

STORK, in ornithology, a bird nearly allied to the crane and the heron, which are all included under the genus *Ardea*. Besides the common stork, there are two others, viz. the black stork, with the breast and belly white, an erect and beautiful bird, somewhat larger than the common heron; and the Brazilian stork, variegated with black and white.——In heraldry, the *stork*, as an emblem of piety and gratitude, is a frequent bearing in coat armour.

STORMS. No branch of natural philosophy has more engaged the attention of men of science during the last four years, than what is termed "*the Law of Storms.*" Col. Reid, of the Royal Engineers, who has published a very interesting work upon this important inquiry, gives the following opinion as to a theory upon which he explains the origin of storms. He observes, that "it is a well-known fact, that some parts of the globe are more subject to storms than others, and throughout this investigation he has felt impressed with the opinion, that the force and frequency of storms may have some connexion with the law of magnetic intensity. The islands of Mauritius and St. Helena are nearly in the same degree of south latitude; yet, at St. Helena, a gale was scarcely ever known, and it is said to be entirely free from actual storms. Those who study Major Sabine's report on the magnetic intensities of the globe, and follow his isodynamic lines, which express unity, will find them opening from each other into the northern part of the South Atlantic, and including a space which thus really appears to be the true Pacific Ocean of the world. Within this space, on Major Sabine's charts, will be found two other lines, marking intensities in decimal parts less than unity; and he states that the intensity at St. Helena, as observed by Capt. Fitzroy, is 0.84, 'the lowest denomination recorded, and the locality of the weakest intensity yet observed on the globe.' When we examine the lines of the greatest intensity, we find them approaching each other in longitude 110° and 260° (100° W.), but in different latitudes; for the line of least intensity does not coincide with the earth's equator. In the Chinese Sea, in longitude of 110° E., it is to the north of the equator, proceeding thence in a direction southward of St. Helena. Of the supposed four magnetic poles, the positions of the two in the northern hemisphere are best ascertained. The meridians which run through these two poles, run also through the Chinese Sea, and near the Caribbean Sea, the localities of typhoons and hurricanes; and Major Sabine's isodynamic lines indicate the magnetic intensities so strongly marked there, that we are led to the belief that there must be some connexion between the magnetic intensity and the force of storms. The study of electricity, as connected with the weather, deserves to be renewed. Comparisons may hereafter be made between the electric state within the compass of a great storm and the atmosphere around its verge; and if seamen dare to pass across the smaller gyrating columns, or circles, they may possibly be able, by finding out their electrical state, to explain the cause of their now mysterious action."—At a meeting of the British Association in 1838, the colonel read a paper on the "Law of Storms," which gave rise to considerable discussion. Professor Bache stated that Mr. Espy, of Philadelphia, held that storms were created by winds blowing into a centre made by the condensation of the atmosphere; and he, Mr. Bache, had himself surveyed the course of a land tornado, in which all trees, buildings, &c. had fallen inwards, as if this were the true exposition of the phenomenon. Professor Stevelly compared the motion of the aerial phenomenon to that of water running out of a tub, in the bottom of which a small hole was made. Sir John Herschel observed, that a knowledge of the present subject would teach seamen how to steer their ships, and save thousands of lives. Sir John suggested that the gulf-stream might be connected with the theory involved in this investigation; and also that the trade-winds might throw a light upon the phenomena which it presented. He also alluded to the spots observed on the sun, which, by analogy, might bear upon it, as he considered them, without doubt, to be the upper apertures of great hurricanes passing over the disk of that luminary, the atmosphere moving analogously to our trade-winds, and being disturbed by certain causes, precisely as the earth's atmosphere might be. It is also worthy of notice, that in Purdy's Memoir of the Atlantic Ocean, it is stated, "that while one vessel has been lying to in a heavy gale of wind, another, not more than thirty leagues distant, has, at the very same time, been in another gale equally heavy, and lying to with the wind in an opposite direction." This statement is obviously to be understood as applicable to two vessels falling under the two opposite sides or portions of the same storm, where the wind in its regular circuit of rotation must, of course, blow from the opposite quarters of the horizon.—But to bring our information down to the latest period, we must refer to the proceedings of the British Association at Glasgow (October, 1840), where we find Mr. Espy giving in detail the result of his observations on the "theory of storms." He commenced by stating, that he had found, by examining simultaneous observations in the middle of storms, and all round their borders, that the wind blows inwards on all sides of a storm towards its central parts; towards a point if the storm is round, and towards a line if the storm is oblong,







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IN ENGLAND, FRANCE, AND GERMANY, THE WEST WINDS ARE MUCH MORE FREQUENT DURING THE SUMMER THAN IN THE WINTER AND SPRING.

extending through its longest diameter. "He went into a great many instances of storms which had happened at particular seasons, and from facts ascertained as to the direction of the winds at various places around the space in which the storm prevailed, he showed that the facts confirmed his theory. For instance, from the storm on the 6th January, 1839, he had prepared on the map an illustration of his theory. The storm began at Liverpool from ten to eleven o'clock P.M. on that evening, and he had written to various places to ascertain the direction of the wind between ten and twelve o'clock P.M. At the north-west of Scotland, near Cape Wrath, the wind was N.W. and it was the same all over the west of Scotland. In Ireland, at the same hours, it was W. and S.W. In the south-west of England it was S.W. On the south-east of England, at the same hours, S.S.E.; and in some places direct S.E.; at Birmingham, a little E. of S.; at Leeds and Manchester, S. of E.; at Liverpool at ten, S.S.E.; and before twelve, S.W. nearly. Thus, were a line drawn from the north-east of Scotland to the south-west of Ireland, on one side of the line the wind would be found to have blown from the N.W. and on the other from the S.E. Mr. Espy then referred to other storms here, in the West Indies, and in America, which went to prove the same theory. The principles upon which it is founded are nearly the following:—The equilibrium of the air may become unstable by the heat or the moisture below. Ascending columns or currents of air are thus formed, which, as they ascend, are subject to less pressure and expand. This expansion produces 1 ½° of cold for every hundred yards of ascent, while the dew-point falls only ½° for the same space. Clouds will begin to be formed when the column of air rises as many hundreds of yards as the dew-point is below the air in degrees. When the vapour condenses it will give out the latent caloric into the air, which will prevent the ascending air from cooling more than half as much as it would otherwise have done on its farther ascent. Thus, the higher the column of air rises, the warmer it will be when compared with the air on the outside of the cloud at the same height. For every degree that the cloud is warmer, it will be a certain amount lighter than air at zero, and thus under the cloud the barometer will fall, and the air will run in under the cloud and upwards, with a velocity of upwards of 240 feet per second. After a long account of his theory of the formation of clouds, Mr. Espy gave a description of the effects of the tornado, which he held to be additional evidence in favour of his theory.—Sir D. Brewster stated that he had received a letter from Colonel Reid, from which it appeared that five water-spouts had been examined carefully with the telescope, in all of which it appeared that there was a revolution of the particles of water in the manner of the hands of a watch, from left to right, and that in the midst of such contradictory statements of facts it appeared difficult to settle the question without further examination.—Professor Phillips, in answer to Sir. D. Brewster, said, he did not conceive that any appearance exhibited by a water-spout could invalidate the conclusive evidence that was to be found of a direct inward motion to a centre, in the case of the tornado, on visiting the path it makes through a forest, and finding the trees thrown down as stated by Mr. Espy; and to him it appeared perfectly conclusive, that there must have been such a direct inward motion in the tornadoes described by the author of this paper. Mr. Espy had disposed of this objection in his explanation of the tornado, where he showed that all bodies taken up on the right-hand of the centre of the path of the tornado must, from the laws of dynamics, go up in a spiral from right to left; while those taken up on the left-hand of the path must move in a spiral upwards from left to right; and that consequently one person might see the tornado whirl in one direction, and another in the other, according to the uniform testimony of the witnesses, along the whole tract of the tornado. Professor Forbes presented three difficulties as objections, which he requested Mr. Espy to answer:—1st. How it was possible to conceive that such a mighty mass of air as he represented, pressing in towards a common centre for hundreds of miles around, could find vent up the very narrow vortex in the centre of the storm? It would require very strong proof to overcome the *à priori* improbability that such was the case. 2nd. That as the tornado had an onward motion, it appeared to him difficult to find phenomena, on viewing the path of a tornado, which would prove without doubt that the motion of the air was inwards to a common centre; for the manner in which trees were thrown down would depend very much on the velocity of the onward motion, compared with the velocity of the wind in the tornado itself. 3rd. He thought Mr. Espy would find that nearly all the vapour in the air would be condensed into water or cloud on going up the ascending column, before reaching any very great height in the atmosphere: and it seemed difficult for him to conceive how the principle of the evolution of latent caloric could produce so great an effect in the comparatively short column of the atmosphere, to cause the barometer to sink as much as it is known to do in great storms. Mr. Espy took these objections in their inverse order. He stated, as to the last objection, that if all the vapour should be condensed into water, the effect would be found to be even greater than he had stated in depressing the barometer; for it was known that, for example, if the dew-point was 70° of Fahrenheit, it contained latent caloric enough to heat the whole atmosphere about 70°, and, of course, half the atmosphere to double that amount; and the professor would find on calculation that the barometer would fall under such a column of 70°, 4-48ths of 30 inches. His (Mr. Espy's) calculation had been made on

AS HEATED AIR IS CONSTANTLY RISING IN THE ATMOSPHERE, COLDER AIR RUSHES IN TO SUPPLY ITS PLACE, WHICH IS THE PRINCIPAL CAUSE OF WINDS.

the supposition that only about three-fourths of the vapour ever is condensed, however high the column may ascend. To the second objection Mr. Espy replied, that Mr. Redfield himself had proposed as a test of the truth of Mr. Espy's doctrine of inward motion, that the trees in the centre of the path should be found with their tops thrown either backwards or forwards, and he (Mr. Espy) introduced professor Holmstead's testimony that such was the fact in the Newhaven tornado. And as to the great hurricanes in the West Indies, Mr. Redfield stated it would be a proof of Mr. Espy's doctrine, if it should be found that those storms began with the wind north-westerly, and ended south-easterly; and to prove that this was the fact, Mr. Espy quoted Edwards's "History of Jamaica," and also the fourth volume of the "Royal Philosophical Transactions," where it is stated that these storms begin with the wind north-west, and, when the wind gets round south-east, the foul weather breaks up. To the first objection Mr. Espy replied, that he did not mean to say that in the large storms of several hundred miles wide they pressed in to the centre to a very narrow vortex before it began to ascend; on the contrary, however wide the cloud extended, it must be going upward, there to form that cloud, frequently leaving a wide space in the centre, where there was a dead calm; and as to the tornadoes, where the vortex was very narrow—not more than two or three hundred yards wide in many cases—it was a perfectly well-established fact that all round the tornado, before and behind, and at the sides, it was a dead calm within a very few yards of the tornado itself: which fact was explained in that part of his paper which had not been read. Mr. Osler stated that, from the investigation he had given the subject, he was convinced that the centripetal action described by Mr. Espy took place in most hurricanes: the particulars he (Mr. O.) had collected, together with the indications obtained from the anemometers at Birmingham and Plymouth, satisfied him that the action of the great storm of the 6th and 7th of January, 1839, was not rotatory *at the surface of the earth* when it passed over England. He differed, however, from both Mr. Espy and Mr. Redfield in one essential point, for he believed that it would be almost impossible for a violent hurricane to take place without at the same time having both *rotatory and centripetal* action. The storm might very probably be generated, in the first instance, in the manner accounted for by Mr. Espy, as well as occasionally by contrary currents; in the first case, the rush of air towards a spot of greater or less diameter would not be perfectly uniform, owing to the varying state of the surrounding atmosphere; this, together with the upward tendency of the current, would, in some cases, produce a violent eddy, or rotatory motion, and a whirlwind, of a diameter varying with the cause, would ensue. The centripetal action would thus be immensely increased, the whirlwind itself demanding a vast supply of air, which would be constantly thrown off spirally upwards, and diffused over the upper atmosphere: thus causing the high state of the barometer which surrounds a storm. When no rotatory action takes place, we merely experience the rush of air which necessarily precedes a fall of rain or a thunder-storm, in consequence of the condensation of moisture: but that nothing violent enough to be called a hurricane can take place unless a strong rotatory action, or in fact a whirlwind, is produced; and that in most cases the rotating portion is not in contact with the earth, and consequently we only felt its secondary or centripetal action." [For the foregoing abridged report we beg to acknowledge our obligations to the *Literary Gazette*, Oct. 10, 1840.]

STO'RY-POSTS, in carpentry, upright timbers disposed in the story of a building, for supporting the superincumbent part of the exterior wall by means of a beam over them.

STRABIS'MUS, in medicine, squinting; a distortion of one or both of the eyes, whereby the pupil is turned from, instead of being directed towards, objects.

STRAIT, or as it generally written, STRAITS, in geography, a narrow pass of the ocean, through which the water flows from one sea to another. The straits of Gibraltar, about 130 miles long and 12 broad, join the Mediterranean sea with the Atlantic ocean. The strait which in a similar manner joins the Baltic with the Atlantic, is called the Sound; and that between Britain and France, the straits of Dover.

STRAMO'NIUM, in botany, a species of *Datura*, commonly growing wild in many parts of Europe and America. All parts of the plant exhale a strong and nauseous odour; and, taken internally, is one of the most dangerous of narcotic poisons. It has, notwithstanding, been employed with advantage in convulsive and epileptic affections; and smoking the dried leaves has often proved beneficial in cases of asthma.

STRAND, the shore or beach of the sea or ocean, or of a large lake, and sometimes of a navigable river; but never used when speaking of the bank of a small river or pond.

STRAPPA'DO, a military punishment formerly practised. It consisted in drawing an offender to the top of a beam and letting him fall, by which means a limb was sometimes dislocated.

STRA'TEGY, that branch of the military science which teaches how to conduct a body of troops in a course of operations against a contending enemy.

STRATIFICA'TION, in mineralogy and geology, a term signifying the process by which substances in the earth have been formed into strata or layers. Also, in chemistry, layers of different substances placed one upon another in a crucible.

STRATOCRACY, a military government, or that form of government in which the soldiery bear the sway.

STRA'TUM (plu. *strata*), in geology, a



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bed or layer of any species of earth, sand, coal, or other fossil, arranged in a flat form, distinct from the adjacent matter. On digging below the earth, it is found that wherever it has not been disturbed before, the laws of nature have composed it, not of a homogenous or similar mass, but of strata, layers, or stripes of different materials. The arrangement and nature of these materials are in the most extreme degree irregular. Naturalists formerly maintained that each bed or stratum of rock is extended universally over the globe, and that the series of beds, in regular succession, environ our planet, like the coat of an onion; whereas, many beds of rock which are common in one country, are entirely wanting in another: but, taken as an illustration of the structure of the crust of our globe over a limited extent, the successive coats of an onion, if they were of different colours, might not inaptly represent the strata that cover certain districts. De Luc, Dolomieu, and Cuvier unite in the opinion, that the phenomena exhibited by the earth, particularly the alternate deposits of terrestrial and marine productions, can only be satisfactorily accounted for by a series of revolutions similar to the deluge.

STRAW'BERRY, in botany, a plant and its fruit of the genus *Fragaria*, of many varieties, all of which are delicious and cooling.

STREAM, a current of water or other fluid, as a river, brook, or rivulet; a *stream* of lead or iron flowing from a furnace; or a *stream* of lava from a volcano.

STREAM-TIN, in mineralogy, particles or masses of tin found beneath the surface of alluvial ground.

STRENGTH, the power with which bodies can overcome other power, as a lever, or an animal, in regard to its muscles, which set themselves like a lever, and act and re-act from one part of the body to another, the action commencing against the ground, or some body connected with the ground.——The word *strength* also implies power of the mind or intellectual force.——In literature, nervous diction. The strength of words, of style, of expression, and the like, consists in the full and forcible exhibition of ideas, by which a sensible or deep impression is made on the mind of a hearer or reader.——The amount of force, military or naval.——Also, legal or moral force; as, "the *strength* of law;" "the *strength* of public opinion," &c.

STREPITO'SO, in music, an Italian word denoting that the part to which it is prefixed must be performed in an impetuous and boisterous style.

STRI'Æ, in architecture, the fillets which separate the furrows or grooves of fluted columns.——*Striæ*, in natural history, small channels in the shells of cockles and other substances.

STRI'ATED, in botany, streaked, or scored with superficial or very slender lines.——*Striated fracture*, in mineralogy, consists of long, narrow, separable parts laid on or beside each other.

STRI'DOR DEN'TIUM, a grinding of the teeth.

STRIX, in ornithology, a genus of birds of the order *Accipitres*; well-known as the owl. [See Owl.]

STROBI'L, in botany, a pericarp formed from an ament by the hardening of the scales. It is made up of scales that are imbricate, as the cone of a pine.——*Strobiliform*, shaped like a strobil, as a spike.

STROMBITE, in the history of fossils, a petrified shell of the genus *Strombus*.

STRON'TIANITE, in mineralogy, prismatic barytes, or carbonate of strontian, a mineral that occurs massive, fibrous, stellated, and crystalized in the form of a hexahedral prism, modified on the edges, or terminated by a a pyramid.

STRON'TIAN, in mineralogy, an earth which, when pure and dry, is perfectly white, and resembles barytes in many of its properties. It is a compound of oxygen and a base to which is given the name *strontium*, in the proportion of 16 per cent. of the former, to 84 per cent. of the latter.

STRO'PHE, in Greek poetry, a stanza: the first member of a poem. This is succeeded by a similar stanza called *antistrophe*.

STRUCTURE, in its usual acceptation, a building of some size and importance. Also, form or construction; as, "we know but little of the *structure* and constitution of the terraqueous globe."——In mineralogy, the particular arrangement of the integrant particles or molecules of a mineral.

STRU'MA, in medicine, glandular tumours on the neck and throat, constituting the scrofula.

STRUTHIO, in ornithology, a genus of birds, order *Gallinæ*; well-known as the ostrich. [See Ostrich.]

STRYCH'NIA, in chemistry, an alkaline substance obtained from the fruit of the *Strychnos nux vomica*, and *Strychnos ignatia*. It is a white substance, crystalized in very small four-sided prisms, and excessively bitter. It acts upon the stomach with violent energy, inducing locked-jaw and destroying life.

STUCCO, in building, a fine kind of plaster composed of lime, sand, whiting, and pulverized marble; used for covering walls, &c.

STUD, in building, a small piece of timber or joist inserted in the sills and beams, between the posts, to support the beams or other main timbers.——A *stud* is also an ornamental knob; as, "coral clasps and amber *studs*." Hence we use the word figuratively in the description of scenery; as, "the sloping sides and summits of the hills were *studded* with neat cottages and elegant villas."——A collection of breeding horses and mares.

STUD'DING-SAIL, in navigation, a sail that is set beyond the skirts of the principal sails. The studding-sails are set only when the wind is light; and appear like wings in the yard-arms.

STUDY, application of the mind to books, to art or science, or to any subject,



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enfeoffing by a tenant or feoffee, who holds lands of the crown.

SUB'JECT, one that owes allegiance to a sovereign, and is governed by his laws. Men in free governments are *subjects* as well as *citizens*; as citizens, they enjoy rights and franchises; as subjects, they are bound to obey the laws.——*Subject*, that on which any mental operation is performed, or which is treated or discussed; as, the question of immediate war with France was the *subject* of debate.——Also, that on which any physical operation is performed; as, a *subject* for dissection, or amputation.

SUBJUNCTIVE MOOD, in grammar, a form of the verb which mentions a thing *conditionally* or by way of *supposition*; and is denoted in the English language by the addition of *if, though*, or some other conjunction, expressed or understood.

SUB'LANATE, in botany, an epithet applied to the leaves or stalks of plants which are somewhat woolly.

SUBLAPSA'RIAN, in theology, one who maintains that the sin of Adam's apostacy being imputed to all his posterity, God in compassion decreed to send his Son to rescue a great number from their lost state, and to accept of his obedience and death on their account. The word *sublapsarian* is opposed to *supralapsarian*.

SUB'LIMATE, in chemistry, any substance procured by the process of sublimation, particularly *corrosive sublimate*, or the muriate of mercury, an extremely acrid and violently poisonous preparation.——*Sublimation*, the process by which volatile substances are raised by heat, and again condensed in the solid form. Sublimation bears the same relation to a solid, that distillation does to a liquid. If the subliming matter concretes into a solid hard mass, it is commonly called a *sublimate*; if into a powdery form, *flowers*.

SUBLI'ME, in literature, that style or manner of writing in which a sublime thought, or a fact sublime in its character, is suitably presented to the mind. It has often been said,—but we suspect there is no valid ground for the assertion,—that when men grow philosophical, they can seldom excel in the *sublime*. The sources of the *sublime* in language are well enumerated by Longinus. The first is elevation of mind; the second, ardent sensibility; the third, the proper use of figures; the fourth, grandeur of diction; and the fifth, a dignified harmony of arrangement. The *sublime* in narration is exemplified in the well-known commencement of the book of Genesis: "God said, let there be light, and there was light."

SUBLI'MED, in chemistry, brought into a state of vapour by heat, and then condensed by cold, as a solid substance.

SUBLIMITY, in oratory and composition, loftiness of sentiment or style. Also, moral grandeur; as, "the incomprehensible *sublimity* of God."

SUBLIN'GUAL, in anatomy, situated under the tongue; as the *sublingual glands*, which secrete the saliva.

SUBLUXATION, in surgery, a violent sprain or incomplete dislocation.

SUBMARI'NE, an epithet for what exists or happens under the sea or water; as, a *submarine* explosion, or *submarine* navigation, &c.

SUBMAXI'LLARY, in anatomy, an epithet for two salivary glands, situated immediately within the right and left angles of the lower jaw.

SUBME'DIANT, in music, the sixth note, or middle note between the octave and subdominant.

SUBMULTIPLE, a number or quantity contained in another number or quantity, a certain number of times; as 4, which is the submultiple of 24, being contained in it six times.

SUBNU'DE, in botany, an epithet for a plant almost naked or bare of leaves.

SUBOCCIPITAL, in anatomy, under the occiput; as, the *suboccipital nerves*.

SUBORNATION, in law, the crime of procuring a person to take such a false oath as constitutes perjury.

SUBPETIOLATE, in botany, having a very short petiole.

SUBPŒNA, in law, a writ commanding the attendance in court of the person on whom it is served; as witnesses, &c.

SUBREPTION, the act of obtaining a favour by surprise or unfair representation, that is, by the suppression of facts.

SUBROGATION, in the civil law, the substituting of one person in the place of another, and giving him his rights.

SUB'SALT, in chemistry, a salt with less acid than is sufficient to neutralize its radicals.

SUBSCAPU'LAR, in anatomy, an epithet for an artery. The *subscapular artery* is the large branch of the axillary artery, which rises near the lowest margin of the scapula.

SUBSCRIPTION, the act of signing or setting one's hand to a paper. Also the giving a sum of money, or engaging to give it, for the furtherance of some common object in which several are interested, as subscriptions in support of charitable institutions, and the like.

SUBSES'SILE, in botany, almost sessile; having very short footstalks.

SUB'SIDY, an aid or tax granted to the king, by parliament, upon any urgent occasion, and levied on every subject of ability, according to a certain rate on lands and goods: but the word, in some of our statutes, is confounded with that of customs. It signifies, in modern usage, a sum of money given by the government of one nation to that of another, for the immediate purpose of serving the latter, and the ultimate one, of benefiting the former. Thus Great Britain *subsidized* Austria and Prussia, to engage those powers in resisting the progress of the French during the late war.

SUB'SOIL, the bed or stratum of earth which lies between the surface-soil and the base on which it rests; the *substratum*.

SUBSTANCE, something that we conceive to subsist of itself, independently of

THE BEAUTY OF SOME "SUBLIMATES" CONSISTS IN THEIR BEING COMPOSED OF VERY FINE LIGHT PARTS, SUCH AS THOSE CALLED "FLOWERS."

"SUBSCRIPTION," IN THE BOOK TRADE, IS A RECIPROCAL OBLIGATION TO DELIVER AND RECEIVE NEW WORKS ON CERTAIN TERMS.

BY BRITISH SUBSIDIES FOREIGN POWERS FOUGHT THEIR OWN BATTLES.

SU'DOR AN'GLICUS, La medicine, an endemic fever, formerly known by the name of the *sweating sickness* of England. This disorder was thus named from its first appearing in this island, and acquired the title of *sudor*, from the patient suddenly breaking out into a profuse sweat, which forms its great characteristic feature.

SUDORIFICS, medicines which promote sweat or sensible perspiration.

SUE, to institute legal process against a person; to prosecute in a civil action for the recovery of a real or supposed right; as to *sue* for debt or damages.

SUFFERANCE, a term in law, applied to tenants; a tenant at *sufferance* being one that continues after his title ceases, without positive leave of the owner.

SUFFRAGAN, in ecclesiastical polity, a term of relation applied to a bishop, with respect to the archbishop who is his superior; or rather, an assistant bishop.

SUFFRAGE, a vote given in deciding a controverted question, or in the choice of a man for an office or trust; as, a true patriot deserves the *suffrages* of his fellow-citizens.

SUFFRUTICOUS, in botany, an epithet for plants which are permanent or woody at the base, but whose yearly branches decay; as sage, thyme, &c.

SUGAR, the sweet constituent of vegetable and animal products. It is a well-known substance, derived chiefly from the juice of a kind of cane (*arundo saccharifera*), growing in the East and West Indies. The *sugar-cane*, which resembles the reeds common in morasses, except that its skin is soft and its pulp a spongeous substance, usually grows to the height of about five or six feet, with a diameter of half an inch. It is divided by knots, at the distance of eighteen inches from each other. At its top, it protrudes several long, green leaves; and in the centre of these is its flower. When the leaves springing from the knots decay, the plant is ripe. It is then cut, stripped of its leaves, and carried to the mills; which consist of wooden rollers covered with steel plates, and are kept in motion by water, wind, or animal power. The juice pressed from the canes passes through a tube into the sugar-house, where it falls into a vessel by which it is conveyed into the first boiler. Here it is simmered over a slow fire, and mixed with potash and quick lime; and by the action of the heat, and the assistance of these ingredients, its unctuous parts are raised to its surface, in the form of a thick scum, which is carefully removed. In a second boiler, over a stronger fire, it is made to boil, and its purification continued by means of a fresh lye. After passing through three other boilers it arrives at the sixth, diminished in quantity to the degree of two-thirds, and in the state of a sirup. Finally, as the liquor cools, the sugar separates from the molasses or sirup in grains; and this being drained off, it leaves the sugar in the state known in commerce by the name of *raw* or *muscovado* sugar. This is farther purified by means of clay, or more extensively by bullock's blood, which forming a coagulum, envelopes the impurities. Thus clarified, it takes the names of *lump*, *loaf*, *refined*, &c. according to the different degrees of purification. Loaf or lump sugar is unknown in the East, sugar-candy being the only species of refined sugar that is made use of in India, China, &c., where the manufacture of that article is carried on to a very great extent. When of the best description, it is in large white crystals, and is as agreeable to the eye as to the taste.—Sugar is a *proximate* element of the vegetable kingdom, and is found in most ripe fruits, and many farinaceous roots. By fermentation, sugar is converted into alcohol, and hence forms the basis of those substances which are used for making intoxicating liquors, as molasses, grapes, apples, malt, &c. The *ultimate* elements of sugar are oxygen, carbon, and hydrogen. Of all vegetable principles, it is considered by many of the most eminent physicians as the most wholesome and nutritious.——*Beet-root sugar.* The cultivation of beet-root, and the manufacture of sugar from it, are making rapid progress on the continent. In Bohemia the population scarcely amounts to 3,300,000 souls, yet there are 87 manufactories in full work, and many more ready to commence. The soil and climate are said to be peculiarly favourable to the growth of this valuable plant. It appears that in France more than 100,000,000 francs are invested in nearly 600 beet-root sugar manufactories; and Louis Philippe has declared, that he by no means despairs of soon seeing persons in France make their own sugar, as in England people brew their own beer. So long since as the year 1830 there were in that country upwards of 100 manufactories of beet-root sugar, from which were produced, in 1829, upwards of 5000 tons of sugar worth 60*l.* per ton, or 300,000*l.*: the profit of which was estimated at 15*l.* per acre; but, it is expected that sugar may thus be made in France at 30*l.* per ton, or 24*l.* per acre profit. The proportion appears to be about two pounds and four-fifths of a pound of the finest white refined sugar from each hundred pounds weight of raw beet-roots. The beet is the same plant which is in England called mangel-wurzel; the white variety being considered the most productive of sugar.——*Maple sugar.* The sugar maple (*Acer saccharinum*) grows in many parts of North America, and the extraction of sugar from it is a great resource to the inhabitants who live far inland, and as a branch of rural economy is extensively practised. The whole process is very simple. The trees are bored obliquely from below upwards, at 18 or 20 inches above the ground, care being taken that the auger penetrates no more than half an inch into the alburnum, or white bark; as a greater discharge takes place at that depth than any other. The liquor is then boiled, and the evaporation urged by an active fire, with careful skimming during the boiling; and the pot is continually replenished with more sap, till a large body has assumed a sirupy consistence. It is afterwards strain-



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wall at about 20s. per ton, which, allowing for the greater bulk of pyrites required in comparison with sulphur, being at the rate of three tons and a half of the former for one of the latter, (which is 12*l.* per ton), it may be brought into the market for one-third of the price. It further states, that from 6000 to 7000 tons of pyrites had this year (1840) been already shipped off to various parts of the kingdom; and that if the proper measures were adopted, it might be brought into such extensive use as to become a valuable article of merchandize, and would give employment to a vast number of miners and labourers.——*Flowers of sulphur*, as they are called, are formed by subliming purified sulphur with a gentle heat in close rooms, where the sublimed sulphur is collected, though the article met with in general under that name is nothing but sulphur finely powdered.

SUL'PHURET, in chemistry, a combination of sulphur with a metallic, earthy, or alkaline base; as, a *sulphuret* of potash. ——*Sulphuret of iron*, a mineral composed of sulphur and iron, which is found in many parts of the world, and which is also called *pyrites* or fire-stone.

SUL'PHURIC ACID, called also VITRIOLIC ACID, consists of sulphur, which constitutes its basis, and of oxygen. When sulphur is exposed to the temperature of 302°, it takes fire spontaneously, burns with a blue flame, yields a strong odour, and, by combining with oxygen, has a tendency to destroy life by suffocation. This vapour, which is composed of the volatilized particles of sulphur and oxygen, is called *sulphuric acid*.——*Sulphurous acid*, an acid formed by the combination of sulphur with a less degree of oxygen than is requisite to form sulphuric acid.

SUL'PHUROUS ACID GAS, in chemistry, is a perfectly aeriform fluid at the ordinary pressure and temperature of our atmosphere. Its odour is strong and suffocating: it cannot maintain combustion, nor the respiration of animals; and its weight is more than double that of atmospheric air. When a mixture of sulphurous acid gas and oxygen gas is made to pass through an ignited tube, the two gases combine and sulphuric acid is formed.

SU'MACH, in botany, the *Rhus coriaria* of Linnæus, so called on acount of its red berries. This shrub is of considerable value, the powder of the leaves, peduncles, and young branches producing the *sumach* of commerce, much employed in tanning light-coloured leathers. In calico-printing, sumach affords, with a mordant of tin, a yellow colour; with acetate of iron, a gray or black; and with sulphate of zinc, a brownish-yellow. Both the leaves and seeds of the sumach are used in medicine, as astringent and styptic.

SUM'MER, one of the four seasons of the year; beginning, in the northern hemisphere, when the sun enters Cancer, about the 21st of June, and continuing for three months; during which time, the sun being north of the equator, renders this the hottest period of the year. In latitudes south of the equator, just the opposite takes place, or, in other words, it is summer there when it is winter here.

SUM'MONS, in law, a warning or citation to appear in court; or a written notification signed by the proper officer, to be served on a person, warning him to appear in court at a day specified, to answer to the demand of the plaintiff.

SUMP, in metallurgy, a round pit of stone, lined with clay, for receiving the metal on its first fusion.——In mining, a pit sunk below the bottom of the mine.

SUMPTUARY LAWS, those laws which, in extreme cases, have occasionally been made to restrain or limit the expenses of citizens in apparel, food, furniture, &c. Sumptuary laws are abridgments of liberty, and of very difficult execution. Those of England were repealed by stat. 1 Jac. I. c. 25.

SUN, in astronomy, the magnificent orb which, occupying the centre of our system of worlds, gives light and heat to all the planets. Its light constitutes the day, and the darkness which proceeds from its absence, or the shade of the earth, is the cause of night. This splendid luminary is 1,384,472 times larger than the earth; and it revolves on its axis in 25¼ days, with its equator inclined 7° 30′ to the plane of the earth's orbit, its apparent diameter being 32′ 36″ when nearest, and 31′ when farthest off. In a paper on the "Construction of the Heavens," Dr. Herschel says, it is very probable, that the great stratum called the *milky way* is that in which the sun is placed, though perhaps not in the centre of its thickness, but not far from the place where some smaller stratum branches from it. Such a supposition will satisfactorily, and with great simplicity, account for all the phenomena of the milky way, which, according to this hypothesis, is no other than the appearance of the projection of the stars contained in this stratum, and its secondary branch. In another paper on the same subject, he says, that the milky way is a most extensive stratum of stars of various sizes admits no longer of the least doubt; and that our sun is actually one of the heavenly bodies belonging to it is as evident. The time and the direction of the sun's rotation are ascertained by the change of the situation of the spots which are usually visible on his disc, and which some astronomers supposed to be elevations, and others to be excavations in the luminous matter covering the sun's surface. These spots are frequently observed to appear and disappear, and they are, in the meantime, liable to great variations, though they are generally found about the same points of the sun's surface. Dr. Herschel, in an ingenious paper, attributes the spots to the emission of an aeriform fluid, not yet in combustion, which displaces the general luminous atmosphere, and which is afterwards to serve as fuel for supporting the process; hence he supposes the appearance of copious spots to be indicative of the approach of

AN EGG CONTAINS A PORTION OF SULPHUR, ON WHICH ACCOUNT A SILVER SPOON BECOMES TARNISHED WHEN IMMERSED IN ONE.

NATIVE SULPHUR FREQUENTLY OCCURS IN CRYSTALINE MASSES, AND SOMETIMES IN COMPLETE AND REGULAR CRYSTALS.



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THE SUPERSTITION OF PAST AGES GAVE A VALUE TO CHARMS AND AMULETS, TO PROTECT PEOPLE FROM DEMONS AND WITCHCRAFT!

SUPERSTI'TION, a habit of the human mind, attributed to those who are thought to attach religious importance to things of a too trivial nature; or to those who are thought wrong in their ideas of the government of the world, not on the side of excluding supernatural agency, but the reverse. Also, the belief of what is absurd, or belief without evidence.

SUPERSTRUC'TURE, any kind of building raised on a foundation or basis; the word being used to distinguish what is erected on a wall or foundation from the foundation itself.

SUPERTON'IC, in music, the note next above the key-note.

SUPINA'TORS, in anatomy, two muscles of the arm, the one called the *supinator longus*, the other the *supinator brevis*, both serving to turn the palm of the hand upwards.

SUPPLEMENT, in literature, an addition made to a book or paper, by which it is made more full and complete.——*Supplement of an arc*, in geometry, the number of degrees which it wants of being an entire semi-circle; as a *complement* signifies what an arc wants of being a quadrant.

SUPPORTERS, in heraldry, figures placed by the side of the shield, and appearing to support it. In this country none under the degree of a banneret are allowed the honour of *supporters*, which are restrained to those called the high nobility. In case of marriage of two parties, both of whom are entitled to supporters, one of each may be borne.——*Supporters*, in architecture, images which serve to bear up any part of a building in the place of a column.

SUPPURA'TION, in medicine, the process of generating purulent matter, or of forming pus, as in a wound or abscess. Also, the matter generated by suppuration.

SUPRA-AX'ILLARY, in botany, growing or inserted above the axilla; as a peduncle.

SUPRA-DECOM'POUND, in botany, the term used when a petiole divided several times, connects several leaflets.

SUPRA-FOLIA'CEOUS, in botany, inserted into the stem above the leaf or petiole, as a peduncle or flower.

SUPRALAPSA'RIAN, in theology, one who maintains that God, antecedent to the fall of man, decreed the apostacy and all its consequences, determining to save some and condemn others, and that in all he does he considers his own glory only.

SUPREM'ACY, in English polity, the supreme and undivided authority of the sovereign over all persons and things in this realm, whether spiritual or temporal.——*Oath of supremacy*, in Great Britain, an oath which acknowledges the supremacy of the sovereign in spiritual affairs, and abjures the pretended supremacy of the pope

SUR'CHARGE, in law, any extra charge made by assessors upon such as neglect to make due returns of the taxes to which they are liable.

SURCIN'GLE, the girdle with which clergymen bind their cassocks. Also a girth for horses.

SUR'CULUS, in botany, any little branch or twig; and is applied by Linnæus particularly to a branchlet of the mosses and a shoot of the ferns.

SURD, in arithmetic and algebra, a number or quantity that is incommensurable to unity. *Surds* are *simple* when they consist of one term, and *compound* when they consist of several terms.

SU'RETY, in law, one who enters into a bond or recognizance to answer for another's appearance in court, or for his payment of a debt, or for the performance of some act, and who, in case of the principal debtor's failure, is compellable to pay the debt or damages.

SURF, the swell of the sea which bursts upon the shore, or against any rock that lies near the surface of the sea. A *surge* is a great wave rolling above the general surface of the water.

SUR'GERY, that branch of medical science which consists in the art of curing or alleviating diseases by local and external applications, or of performing surgical operations.

SURMUL'LET, in ichthyology, a fish of the genus *Mullus*, remarkable for the brilliancy of its colours, and for the changes which they undergo as the fish expires.

SUR'NAME, the family name; the name or appellation added to the baptismal or Christian name. Camden derives it from *sur*, as being added over or above the other, in a metaphorical sense only. The most ancient *surnames* were formed by adding the name of the father to that of the son, in which manner were produced several English *surnames*, ending with the word son; thus, *Thomas William's son*, makes *Thomas Williamson*. The feudal system introduced a second description of *surnames*, derived from the names of places; as Sutton, Acton, &c.; and these were originally written with the particle *de* or *of*; as Henry de Sutton. In short, the greater part of surnames originally designated occupation, estate, place of residence, or some particular thing or event that related to the person.

SURREBUTTER, in law, the replication or answer of the plaintiff to the defendant's rebutter.

SURREJOIN'DER, in law, a second defence, as the *replication* is the first, of the plaintiff's declaration in a cause, and is an answer to the rejoinder of the defendant.

SURREN'DER, in law, a deed testifying that the tenant for life or years of lands, &c. yields up his estate to him that has the immediate estate in remainder or reversion.

SUR'ROGATE, in the civil law, a deputy, or person substituted for another. The word is most commonly used as the title of a bishop's chancellor,

SUR'TURBRAND, in natural history, fossil wood, found in great abundance in Iceland. It extends through the whole of the north-western part of the island, and is

SO FROME IS IGNORANCE TO SUPERSTITION, THAT THERE IS SCARCELY A PARISH IN BRITAIN WITHOUT ITS HAUNTED HOUSE OR WANDERING GHOST!



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IN SUTTEES THE WIDOW IS SOMETIMES LAID IN A CAVITY UNDER HER HUSBAND'S CORPSE; SOMETIMES SHE EMBRACES IT.

evidently a subterranean forest, impregnated with bituminous sap, and compressed by the weight of superincumbent rocks.

SURVEY'ING, the art of measuring land, laying down its dimensions upon paper, and finding its content or area. It is of two kinds, *land surveying* and *marine surveying*, the former having generally in view the measure or contents of certain tracts of land, and the latter the position of beacons, towers, shoals, coasts, &c. Those extensive operations which have for their object the determination of the latitude and longitude of places, and the length of terrestrial arcs in different latitudes, also fall under the general term *surveying*, though they are frequently called *trigonometrical surveys*.

SURVEY'OR, in law, one who views and examines for the purpose of ascertaining the condition, value, and quality of a thing; or who surveys or superintends any business, as the surveyor of the highways, a parochial officer who sees that the roads are kept in repair, &c.

SURVI'VOR, in law, the longest liver of joint-tenants, or of any two persons who have a joint interest in a thing; on which case, if there be only two joint-tenants, upon the death of one, the whole goes to the survivor; and if there be more than two, the part of the deceased is divided among all the survivors.

SUS, in zoology, the generic term for the animal which is well known by the name of the *hog*, being of the class *Mammalia*, order *Bellua*.

SUSPEN'SION, temporary privation of power, authority, or rights, usually intended as a punishment. A military or naval officer's suspension takes place when he is put under arrest.——In law, prevention or interruption of operation; as the *suspension* of the habeas corpus act.——*Suspension*, in rhetoric, a keeping of the hearer in doubt and in attentive expectation of what is to follow, or what is to be the inference or conclusion from the arguments or observations.——*Suspension bridges*. [See BRIDGE.]——*Suspension of arms*, a short truce agreed on by hostile armies, in order to bury the dead, make proposals for surrender, &c.——*Points of suspension*, in mechanics, those points in the axis or beam of a balance wherein the weights are applied, or from which they are suspended.

SUTTEE', the act of sacrifice to which a Hindoo widow submits, namely, that of immolating herself on the funeral pile of her husband. Though none of the sacred books of the Hindoos absolutely command the *suttee*, they speak of it as highly meritorious, and the means of obtaining eternal beatitude. It is believed also to render the husband and his ancestors happy, and to purify him from all offences, even if he had killed a brahmin. Since the year 1756, when the British power in India became firmly established, upwards of 70,000 Hindoo widows have thus been sacrificed. It is gratifying, however, to add, that this shocking perversion of devotion has at length been abolished; and to lord Bentinck, the governor-general of India, the honour of the abolition is due. Public opinion was greatly divided as to the propriety of our interfering with one of their most solemn religious rites; (as may be gathered from bishop Heber's Narrative); but the humane decision of the governor-general appears to have been received by the people with heartfelt satisfaction. A short time before lord Bentinck's order, a rajah in the hill country, who died, had twenty-eight wives burned with his body!

SU'TURE, in anatomy, the union of bones by means of dentiform margins; as, the coronal suture; the sagittal suture, &c.

SWAIN'MOTE, or SWEIN'MOTE, in law, one of the forest courts to be holden before the verderers, as judges, by the steward of the swainmote; the swains, or countrymen, composing the jury.

SWAL'LOW, in ornithology, a migratory bird of the genus *Hirundo*. There are several species, which, though they differ in colour as well as in other respects, are all distinguished by the untiring rapidity of their flight and evolutions. Their feet are short, and the wings remarkably long. In winter they migrate to tropical climates, a few days being sufficient to pass from the arctic to the torrid zone; and it has been found by experiment, that individuals always come back to their former haunts. Among the chief varieties are—1. the light bellied swallow (*hirundo viridis*) of a light, glossy, greenish blue colour above, the lower parts white, and a forked tail: 2. the barn-swallow (*hirundo rufa*), so called from its frequently attaching its nest to the rafters in barns; the upper parts are steel blue, the lower light chesnut, the wings brownish-black, and the tail greatly forked: 3. the purple martin (*hirundo purpurea*), a general favourite, which every where takes up its abode among the habitations of man; its colour is a deep purplish blue, with the wings and tail brownish-black: 4. the bank swallow (*hirundo riparia*), of a dark brown colour, which breeds in holes on the sides of steep banks: 5. the cliff swallow (*hirundo fulva*), distinguished by its even tail: and, 6. the swift, or chimney swallow (*hirundo pelasgia*), which differs widely from the others in its form and manners. The colour is entirely deep sooty brown; the tail is short and rounded, having the shafts extended beyond the vanes, sharp-pointed, strong and elastic, by means of which structure the bird is enabled to rest against perpendicular walls. It is easily distinguished in the air by its short body and long wings, their quick and slight vibration, and its wide, unexpected, diving rapidity of flight. It appears to live in the air more than any other bird, and to perform all functions there, save those of sleeping and incubation. According to the observations of that pleasing naturalist, Mr. White of Selborne, swifts in general feed in a higher district than the other species; a proof that gnats and other insects also abound to a considerable height in

WHEN SWIFTS SETTLE ON THE GROUND THEY CAN HARDLY RISE AGAIN, ON ACCOUNT OF THEIR HAVING SUCH SHORT LEGS AND LONG WINGS.



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the air; they also range to vast distances; since locomotion is no labour to them who are endowed with such wonderful powers of wing. Their powers seem to be in proportion to their levers, and their wings are longer in proportion than those of almost any other bird.

SWAMP, wet and spongy land in low situations, but not usually covered with water.

SWAMP-ORE, in mineralogy, an ore of iron found in swamps and morasses, the colour of which is a dark yellowish brown or gray. It is called also bog-ore, or indurated bog iron ore.

SWAN *(cygnus)*, in ornithology, a large aquatic fowl of the genus *Anas*, of two varieties, the wild and the tame. The plumage is of a pure white colour, and its long arching neck gives it a noble appearance. In northern climates, the swans are the ornament of the rivers and lakes, over which they seem to preside, from the majesty, ease, and grace of their movements. They swim rapidly, and their flight is powerful and long continued; they live in society, attain a great age, and make their nests near the margin of the water, upon the ground.

SWIETE'NIA, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The principal species is the *Swietenia mahogoni*, or *Cedrus*, the mahogany-tree.

SWIM'MING, the buoyancy and progressive motion of a body, and particularly of an animal body, in water. A very large proportion of the animal tribes are furnished with a greater or less capacity for swimming. Fishes are wholly adapted to it; amphibious creatures, as much, if not more, than to walking; web-footed birds pass a considerable part of their existence upon the surface of the water, and many of them occasionally make their way beneath it. The same may be said of innumerable species of insects; and all quadrupeds are at least capable of preserving their lives, if accident immerses them in this element, while some resort to it with peculiar readiness. Man alone is incapable of swimming, without learning to do so as an art. The reason of this peculiar inability of the human race is attributed to the construction of the body, and especially of the head, from which results a situation of the centre of gravity wholly different from that in quadrupeds. Of man, the head, with respect to the body, and compared with the heads of other animals, as proportioned to their bodies, is singularly heavy; a quality occasioned by the larger quantity of flesh, bones, and brain with which it is furnished; and the absence of those sinuses or cavities which, like air-bladders, lighten that of other animals. The head of a man, therefore, sinks by its own gravity; and, thus exposing the body to fill with water, causes him to drown. Brutes, on the other hand, are able to keep their nostrils above water with facility, and thus, respiring freely, are, on the principles of statics, out of danger. From these observations it will follow, that the *art of swimming*, which can be acquired by exercise only, chiefly consists in keeping the head above water; and that the hands and feet are to be used as oars and helm, in managing the course of the vessel. To all the advantages of cold bathing, swimming adds many others: it greatly strengthens the abdominal muscles, the muscles of the chest, and the organs of respiration, the spine, neck, and arms. It increases courage, and furnishes an agreeable excitement—the usual attendant of manly and brisk exercise, but peculiarly so of swimming; and it affords us the means of preserving our lives, or those of others, in situations of imminent peril. [See FLOATING.]

SWING'-WHEEL, in a time-piece, the wheel which drives the pendulum. In a watch, or balance-clock, it is called the *crown-wheel*.

SWIV'EL, in gunnery, a small cannon or piece of artillery, carrying a shot of half a pound, fixed on a socket on the top of a ship's side, stem, or bow, or in her tops, in such a manner as to be turned in any direction.——A strong link of iron used in mooring ships, and which permits the bridles to be turned round.——A ring which turns upon a staple.

SWORD-FISH, in ichthyology, a fish of the genus *Xiphias*, the snout or upper jaw of which is shaped like a sword.

SYC'AMORE, in botany, the *Ficus Sycamorus* of Linnæus.

SYC'AMORE-MOTH, in entomology, a large and beautiful moth, so called because its caterpillar feeds on the leaves of the sycamore.

SYC'ITE, or FIG-STONE, a name sometimes given to nodules of flint or pebbles which resemble a fig.

SYC'OPHANT, an obsequious flatterer or parasite. This word was originally used to denote an informer against those who stole figs, or exported them contrary to law. Hence, in time it came to signify a tale-bearer or informer in general; thence a flatterer, deceiver, or parasite.

SYDERA'TION, in botany, the blasting of trees with great heat and drought.

SYL'LABLE, in grammar, a combination of letters uttered by a single effort or impulse of the voice, as *ea*s; or a single letter, as *o* in *over*. At least one vowel or open sound is essential to the formation of a syllable.

SYL'LABUS, an abstract, or compendium containing the heads of a discourse.

SYLLEP'SIS, in grammar, a figure by which we conceive the sense of words otherwise than the words import, and construe them according to the intention of the author. Also, where two nominative cases singular of different persons are joined to a verb.

SYL'LOGISM, in logic, an argument consisting of three propositions; the two first of which are called the *premises*, and the last the *conclusion*. Syllogisms are nothing more than our reasoning reduced to form and method; and every act of reasoning





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SYMPATHY UNITES MANKIND; FOR EVERY MAN WOULD BE A DISTINCT SPECIES TO HIMSELF WERE THERE NO SYMPATHY AMONG INDIVIDUALS.

implies three several judgments, so every syllogism must include three distinct propositions. Thus, in the following syllogism: —"Every creature possessed of reason and liberty is accountable for his actions;" "Man is a creature possessed of reason and liberty;" "Therefore man is accountable for his actions." These propositions are denominated the major, the minor, and the conclusion.——An *analogical syllogism* founds the conclusion upon similitude; "As the base is to the column, so is justice to the commonwealth: but if the base be withdrawn, the column is overturned; therefore if justice is taken away, the commonwealth is overturned."

SYL'VANITE, in mineralogy, the name for a species of *Tellurium*.

SYM'BOL, the emblem, sign, or representation of some moral quality by the images or properties of natural things; as the lion is a symbol of courage; the lamb a symbol of meekness; two hands joined together, a symbol of union, &c. These, symbols were much used by the ancients in representing their deities, and are still continued in various ways. In the eucharist, the bread and wine are called *symbols* of the body and blood of Christ.——*Symbolical philosophy*, is the philosophy expressed by hieroglyphics.

SYM'PATHY, the quality of being affected by feelings similar to those of another in whose fate we are interested. This kind of *sympathy* is produced through the medium of organic impression, and is a correspondent feeling of pain or regret. Thus we sympathise with our friends in distress. The word *sympathy* is also used, but less correctly, to denote an agreement of affections or inclinations, or a conformity of natural temperament which makes two persons pleased with each other.——In natural history, it means a propension or tendency in things inanimate to unite, or to act on each other; as, the *sympathy* between the loadstone and iron.——In medicine, *sympathy*, or "consent of parts," signifies a correspondence of various parts of the body in similar sensations or affections; or an affection of the whole body or some part of it, in consequence of an injury or disease of another part.——A *sympathetic disease* is one which is produced by a remote cause, as when a fever follows a local injury. In this case, the word is opposed to *idiopathetic*, which denotes either an original disease, or that which is produced by a proximate cause. ——In astrology, the term *sympathetic* is applied to two nerves (the great intercostal and the facial nerves), from the opinion that their communications are caused by sympathies.

SYM'PHONY, in music, primarily signifies a consonance or harmony of sounds, agreeable to the ear, either vocal or instrumental, or both. Also, an overture or other composition for instruments.

SYM'PHYSIS, in anatomy, the union of bones by cartilage.——In surgery, a coalescence of a natural passage; also, the first intention of cure in a wound.

SYMPHY'TUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are perennials, consisting of the different kinds of comfrey.

SYMPO'SIARCH, among the ancients, was the director and manager of an entertainment. This office was sometimes performed by the person at whose expense the feast was provided, and sometimes by the person whom he thought fit to nominate. The feasts of the ancients were called *Symposia*; hence the name.

SYMPTOM, in medicine, any appearance in a disease, which serves to indicate or point out its cause, approach, duration, event, &c. Particular symptoms which more uniformly accompany a morbid state of the body, and are characteristic of it, are called *pathognomic* or *diagnostic* symptoms. In a strict sense, however, *symptom* means no more than the consequences of diseases, and of their causes, exclusive of the diseases and causes themselves.——A *symptomatic* disease is one which proceeds from some prior disorder; as a symptomatic fever, proceeding from local pain or local inflammation. It is opposed to *idiopathic*.

SYMPTOMATOL'OGY, that part of the science of medicine which treats of the symptoms of diseases.

SYNÆ'RESIS, the shortening of a word by the omission of a letter, as *ne'er* for *never*.

SYN'AGOGUE, the building appropriated to the religious worship of the Jews; or the congregation who therein assemble for the performance of their religious rites.

SYN'AGRIS, in ichthyology, a fish with a sharp back, reckoned a species of *Sparus*. It is caught in the Archipelago.

SYNALŒ'PHA, in grammar, a contraction of syllables, performed principally by suppressing some vowel or diphthong at the end of a word, before another vowel or diphthong at the beginning of the next: as, *ill' ego*, for *ille ego*.

SYNARTHRO'SIS, in anatomy, a species of articulation, where there is only an obscure motion, as in the bones of the carpus and metacarpus, &c.; or where there is no motion at all, as in the sutures of the skull.

SYN'CHISIS, in rhetoric, a confused and disorderly placing of words in a sentence.

SYNCHONDRO'SIS, in anatomy, a species of *symphysis*; being the union of two bones by means of a cartilage, as in the vertebræ.

SYN'CHRISIS, in rhetoric, a figure of speech in which opposite persons or things are compared.

SYN'DESMUS, in anatomy, a ligament for binding together the bones and other parts.

SYN'DICI, in antiquity, orators appointed by the Athenians to plead in behalf of any law which was to be enacted or abrogated.

SYNE'CHIA, in medicine, a concretion of the iris of the eye with the cornea, or with the capsule of the crystaline lens.

SYNCHORE'SIS, in rhetoric, a figure of speech wherein an argument is scoffingly

HOWEVER STRIKINGLY A SYMBOL MAY EMBODY AN IDEA, IT IS ALWAYS ATTENDED WITH A LIABILITY TO VARIOUS INTERPRETATIONS.



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SYNODICAL EPISTLES ARE CIRCULAR LETTERS WRITTEN BY THE SYNODS TO THE ABSENT PRELATES AND CHURCHES.

conceded to, for the purpose of retorting to it more pointedly.

SYN'CHRONISM, in chronology, concurrence of two or more events in time.——*Synchronal*, simultaneous, or happening at the same time.

SYN'COPATE, in a primary sense, to contract, as a word, by taking one or more letters or syllables from the middle.——In music, to prolong a note begun on the unaccented part of a bar, to the accented part of the next bar; or to connect the last note of a bar with the first of the following.

SYN'COPE, in medicine, a swooning, wherein the patient continues without any sensible motion or respiration; accompanied with a suspension of the action of the brain and a temporary loss of sensation and volition.——*Syncope*, in grammar, an elision or retrenchment of a letter or syllable from the middle of a word.——In music, the division of a note introduced when two or more notes of one part answer to a single note of another. The word *syncopation* is, however, more frequently used in music.

SYN'DIC, an officer of government, invested with different powers in different countries; generally a kind of magistrate entrusted with the affairs of a city or community. The university of Cambridge has its *syndics*; and in Paris almost all the companies, the university, &c. have theirs.

SYNEC'DOCHE, in rhetoric, a figure or trope by which the whole of a thing is put for a part, or a part for the whole; as the genus for the species, or the species for the genus, &c.

SYNGENE'SIA, the 19th class of the Linnæan system of plants, containing six orders: 1. *Polygamia æqualis*; 2. *Polygamia superflua*; 3. *Polygamia frustanea*; 4. *Polygamia necessaria*; 5. *Polygamia segregata*; and 6. *Monogamia*; in which the stamens are united in a cylindrical form by the anthers.

SY'NOCHA, in medicine, a species of continued fever, attended with symptoms denoting general inflammation in the system. It makes its attack at all seasons of the year, but is most prevalent in the spring; and it seizes persons of all ages and habits, but more particularly those in the vigour of life, and of a plethoric constitution. It is often brought on by sudden transitions from heat to cold, swallowing cold liquors when the body is much heated by exercise, or by intemperance of any kind.

SY'NOCHUS, in medicine, a species of mixed fever, commencing with symptoms of synocha, and terminating in typhus.

SYN'OD, in ecclesiastical affairs, a council or meeting to consult on matters of religion. In Scotland, a synod is composed of several adjoining presbyteries. The members are the ministers, and a ruling elder from each parish.——*Synod*, in astronomy, a conjunction, or concourse of two or more stars or planets, in the same optical place of the heavens.——*Synodical month*, the period from one conjunction of the moon with the sun to another. This is called also a *lunation*, because in the course of it the moon exhibits all its phases.

SYN'ONYME, or SYN'ONYM, a word having the same signification as some other word. We rarely find two words precisely *synonymous* in all situations; though many are sometimes synonymous, and at other times not so. Thus when we speak of the large rolling swell of the sea, we may call it a *wave*, or a *billow*; but when we speak of the small swell of a pond, we may call it a *wave*, but not a *billow*.

SYNOP'SIS, a collection of things or parts so arranged as to exhibit the whole or the principal parts in a general view.

SYNO'VIA, in anatomy, the fluid which lubricates the articulations of the bones, and which is for that purpose secreted in the cavities of the joints.

SYN'TAX, that division of the grammatical art which analyses the dependence of parts of speech upon one another, and supplies rules for their mutual government. Syntax, as an art, may be divided into two branches: the one common to all languages, and by which words are made to agree in gender, number, case, person, and mood; the other peculiar to each language, and by which one mood is made to govern another, and the consequent variations effected: the first of these is called *concord*; the second *government*. It has been said that the first merit of language is intelligibility; its first grace, purity; and that every other excellence is subordinate. Syntax, then, especially deserves attention: as neither intelligibility nor purity of style can be found where the rules of syntax are violated.

SYN'THESIS, in logic, that process of reasoning in which we advance by a regular chain from principles before established or assumed, and propositions already proved, till we arrive at the conclusion. The *synthetical* is therefore opposed to the *analytical* method.——In chemistry, the uniting of elements into a compound: the opposite of *analysis*, which is the separation of a compound into its constituent parts.——*Synthesis*, in antiquity, a loose robe worn by the Romans at their meals.

SYNTONIC, in music, an epithet used by ancient musical writers to distinguish a species of the diatonic genus.

SYPHERING, in ship-building, the lapping the edge of one plank over the edge of another in constructing the bulkheads.

SYR'IAC, pertaining to Syria, or its language; as, the *Syriac* version of the Pentateuch.

SYR'IACISM, or SYR'IANISM, a Syrian idiom, or a peculiarity in the Syrian language.

SYRIN'GA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. The species are shrubs of the lilac tribe.

SYRINGOTOMY, in surgery, the operation of cutting for the fistula.

SYSSARCO'SIS, in anatomy, a species of union of bones in which one bone is united to another by means of an intervening muscle.

IN EVERY LANGUAGE THERE IS SOME FUNDAMENTAL PRINCIPLE, WHICH PERVADES AND REGULATES ITS WHOLE CONSTRUCTION.



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weighing 10 or 11lbs. each, twelve of which make a side or crate of glass.——In religion, a division of the ten commandments; as, the first and second *tables*. The first table comprehends our more immediate duties to God; the second table our more immediate duties to each other.——In heraldry, escutcheons containing nothing but the mere colour of the field, and not charged with any bearing, are called *tables d'attente*, tables of expectation, or *tabulæ rasæ*.——Among jewellers, a *table* diamond, or other precious stone, is that whose upper surface is quite flat, and only the sides cut in angles.——Knights of the *round table*, a military order instituted by Arthur, the first king of the Britons, A.D. 516.——*Laws of the twelve tables*, the first act of laws of the Romans, so called, probably, because they were engraved on tables or plates of copper, to be exposed in the most public part of the forum.

TABLEAUX VIVANTS (LIVING PICTURES), groupes of persons, so dressed and placed as to represent paintings. This is a source of refined amusement in Germany and some other parts of the continent, and is thus managed: A frame is made of sufficient width, covered with gauze, behind which the persons stand in appropriate attitudes and costume, either taken from celebrated historical pictures, or left to the genius of the parties who represent a scene from the striking descriptions of a poet or novelist. They are often got up with great taste in families on birth-days and festive occasions, and are sometimes also exhibited on the stage.

TABOO', a word used by the South Sea islanders to denote something consecrated, sacred, and forbidden to be touched, or set aside for particular uses and persons.

TAB'ULAR SPAR, in mineralogy, the schaalstein of Werner, and the prismatic augite of Jameson. It is a species of limestone, of a grayish white colour, whose primary form is regarded as a doubly-oblique prism. Before the blowpipe it melts on the edges into a semi-transparent colourless enamel.

TACAMAHAC'A, or TAC'AMAHAC, in chemistry, a resin obtained from the *Fagara octandra*, and brought from America in large oblong masses wrapped in flag leaves, of a light brown colour, and an aromatic smell between that of lavender and musk.

TA'CES, in archæology, armour for the thigh.

TACK, the course of a ship in regard to the position of her sails; as the starboard *tack*, or larboard *tack*.——*To tack*, to change the course of a ship by shifting the position of the sails from one side to the other.

TAC'KLE, the rigging, blocks, and other apparatus of a ship. Also a machine for raising and lowering heavy weights, consisting of a rope and blocks called a pulley.

TACTICS, a term which, in its most extensive sense, relates to those evolutions, manœuvres and positions which constitute the main spring of military and naval finesse: tactics are the means by which discipline is made to support the operations of a campaign, and are studied for the purpose of training all the component parts according to one regular plan or system; whereby celerity, precision, and strength are combined, and the whole rendered effective.

TADOR'NA, in ornithology, the sheldrake, a beautiful species of Anas, nearly equal to the goose in size, and variegated with white, and with a longitudinal spot of gray on the belly: it is frequent on the north-western coasts of England.

TAD'POLE, a young frog, before it has disengaged itself from the membranes that envelope it in its first stage of life, and seeming to consist only of a large head and slender tail.

TÆ'NIA, the *tape-worm*, in natural history, a genus of the *vermes* class, containing more than a hundred species, infesting mammalia, reptiles, and fish. The animals of this genus of worms are destined to feed on the juices of various animals, and are usually found in the alimentary canal, generally at the upper part of it. They are sometimes collected in great numbers, and occasion the most distressing disorders.

TAF'ELSPATH, in mineralogy, a lamellar substance of a yellowish gray or rose-white, forming masses of prisms, chiefly lime and silex.

TAF'FEREL, the upper part of a ship's stern, being a curved piece of wood, generally ornamented with carved work.

TAL'BOT, in sporting, a sort of hunting dog between a hound and a beagle, with a large snout, and long, round, pendulous ears.

TALC, in mineralogy, a well known species of magnesian earth, the colour of which is generally one of the shades of green. It consists of broad laminæ or plates, is soft and unctuous to the touch, has a shining lustre, and is often transparent. The species *talc* comprehends the varieties of pale green, gray, and white varieties, and is divided, in popular language, into *common*, *earthy*, and *indurated* talc. By the action of fire, the laminæ open a little, the fragment swells, and the extremities are with difficulty fused into a white enamel. When rubbed with resin, talc acquires positive electricity. It is found in various parts of the world. In England, Northamptonshire is the district most peculiarly known for this production; and it is met with in the northern parts of Scotland. The Romans used talc both for window-lights, and for the pavement of magnificent buildings; and it is still used in many parts of India and China, in windows instead of glass.

TAL'ENT, among the ancients, the name of a coin, the true value of which cannot well be ascertained, but it is known that it was different among different nations. Among the Hebrews there was both a talent of gold and a talent of silver; the gold coin weighed only four drachmas, and was the same as the shekel of gold: but

EVERY DESCRIPTION OF TROOPS, AS CAVALRY, ARTILLERY, LIGHT AND HEAVY INFANTRY, &c., HAS ITS PECULIAR TACTICS.

HUMBOLDT SAYS, THAT THE ITOMAQUES, A SAVAGE RACE ON THE BANKS OF THE ORINOCO, PARTLY SUBSIST ON A KIND OF TALC.



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in architecture, is applied to a wall of a circular building, surrounded with columns. ——In mechanics, the cylindrical axle-tree of a wheel, which serves to draw up stones out of a quarry.

TAMBOURI'NE, one of the most ancient musical instruments, and still used, particularly in Biscay, where a large kind of tambourine, called *tambour de Basque*, is used to accompany all the national songs and dances. In Scripture this instrument is designated a *timbrel*; in profane history we find it was popular among most of the Eastern nations; and in the middle ages it was used by the Troubadours and minstrels. The present tambourine consists of a wooden or brazen hoop, over which a skin is extended, and which is hung with bells. Sometimes the thumb of the right hand is drawn in a circle over the skin; sometimes the fingers are struck against it; while it is supported by the thumb of the left hand. From the performance of it being capable of displaying various graceful movements of the body, the tambourine is generally an attribute of Terpsichore.

TAM'POE, an East Indian fruit somewhat resembling an apple.

TAN, the bark of the oak, or other tree ground or chopped, and used in tanning leather. Tan, after being used in tanning, is used in gardening for making hotbeds.

TAN'GENT, in geometry, a straight line which touches a curve, but which, when produced, does not cut it ——In trigonometry, the tangent of an arc, is a right line touching the arc at one extremity, and terminated by a secant passing through the other extremity.

TAN'ISTRY, a tenure of lands in Ireland, by which the proprietor had only a life estate, and to this he was admitted by election. The primitive intention seems to have been that the inheritance should descend to the oldest or most worthy of the blood and name of the deceased; but the practice often gave rise to the fiercest and most sanguinary contests between tribes and families.

TAN'NIN, in chemistry, the astringent vegetable substance procured from tan, by macerating it in cold water; this has the property of forming with animal gelatine a tough insoluble matter, and is therefore used in converting skins into leather by the process of tanning. The oak and its products, gall-nuts, &c. contain two kindred matters, tannin and gallic acid, which seem by the powers of vegetation, mutually convertible. They combine with much facility, forming, from a state of solution, a soft, flocculent precipitate, which, on drying, becomes hard and brittle. On the formation of this combination, the art of tanning depends. The skin of an animal when freed from the hair, epidermis, and cellular fibre, consists chiefly of indurated gelatine. By immersion in the tan-liquor, which is an infusion of bark, the combination of tannin with the organized gelatine, which forms the animal fibre, is slowly established; and the compound of tannin and gelatine not being soluble in water, and not liable to putrefaction, the skin is rendered dense and impermeable, and not subject to the spontaneous change which it would otherwise soon undergo.

TAN'NING, the art or process of preparing leather from the raw hides of animals, by means of tan. After being cleared of the hair, wool, and fleshy parts by the help of lime, scraping, and other means, they are macerated in an astringent liquor, formed from the bark of the oak. This is usually done by putting into the tan-pit layers of ground oak-bark and skins alternately, with the addition of a small quantity of water. This process is long and laborious; but, by accounts which have lately been published, it would appear that a discovery has been made which wonderfully facilitates the operations. By means of a tanning machine, or pair of horizontal rollers fixed over a tan-pit, between which is introduced a bolt or band of hides attached by ligatures to each other, to the number of fifty to a hundred, and by which the rollers are constantly fed or supplied, the hides are lifted out of the pit on one side of the machine; and as they pass between the rollers the exhausted ooze or tanning liquor is pressed out of them, and they are deposited in folds in the pit, on the other side of the machine, where they absorb another supply of fresh ooze. The first hide having been inserted between the rollers, the others follow in succession, and upon arriving at the end of the band the motion of the roller is reversed, and the belt is returned through the machine to receive another pressing. This alternate motion is constantly repeated, the pit being replenished from time to time with fresh solutions of tan, till the operation is completed. The effects said to be produced by this simple plan, are—the shortening the time of tanning to one-fourth of that generally required; and the production of a considerable increase of weight. It must, however, be observed, that tanning is a chemical process, and that improvements in the arts may naturally be expected to result from the progress of chemical science, independent of the mere mechanical operations.

TAN'SY, in botany, a plant of the genus *Tanacetum*, with small yellow flowers, like buttons, disposed in a large upright corymb. The whole plant has a strong and penetrating odour, and an extremely bitter taste. It contains an acrid volatile oil, and is used in medicine as a stimulant and carminative.

TAN'TALITE, in mineralogy, the ore of *tantalum*, otherwise called *columbium*, a newly-discovered metal. It is imbedded in small angular pieces, and is of an iron black colour, sometimes tinged with blue.

TAPE'STRY, a curious production of the loom, wherein the finest pictures may be represented. It consists of a kind of woven hangings of wool and silk, often enriched with gold and silver, representing figures of men, animals, landscapes, historical subjects, &c. This species of curtain covering



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THE ART OF TANNING CONSISTS IN DIVESTING SKINS OF THEIR PUTRESCENT QUALITIES, AND AT THE SAME TIME PRESERVING THEIR PLIABILITY.

TANNIN HAS NEVER BEEN MET WITH IN THE POISONOUS PLANTS, NOR IN SUCH AS CONTAIN ELASTIC, RESINOUS, AND MILKY JUICES.

giving notice to soldiers to repair to their quarters in garrison, or to their tents in camp.

TAURIDIA, among the Romans, were certain games in honour of the infernal gods. They are sometimes called *taurii ludi*.

TAURUS, in astronomy, the Bull; a splendid constellation in the second sign of the zodiac, containing the Pleiades, Aldebaran, &c. This constellation, according to the British catalogue, contains 141 stars.

TAXES, the assessments imposed by law for the public service, either *direct*, as on persons and necessaries; or *indirect*, as on luxuries and raw materials. Taxes imposed on goods at the time of their importation, are denominated *customs*, *duties*, or *imposts*.

TAXIDERMY, the art of preparing and preserving specimens of animals.

TAXIS, in surgery, an operation by which those parts which have quitted their natural situation, are replaced by the hand without the assistance of instruments, as in reducing hernia, &c.

TEA, the leaf of a Chinese tree, from which an agreeable and useful beverage of the same name is made. The tea plant is a native of China, Japan, and Tonquin. It flourishes most in valleys, the sloping sides of mountains, and the banks of rivers exposed to the southern rays of the sun. There are two varieties of the tea plant, *thea viridis*, with broad leaves, and *thea bohea*. The names given in commerce, to the different sorts of tea, are unknown to the Chinese, the imperial excepted, and are supposed to have been applied by the merchants of Canton; but the names by which they are imported into Europe are well known. The black teas are, bohea, congo, campo, souchong, pouchong, and pekoe; the green teas are twankay, hyson skin, young hyson, hyson, imperial, and gunpowder.—Tea, moderately and properly taken, acts as a gentle astringent and corroborative: it strengthens the stomach and bowels, assists digestion, and acts also as a diuretic and diaphoretic; but in most constitutions, if taken to excess, it produces considerable excitement and wakefulness. The tea plant is the growth of a particular region, situated between the 30th and 33rd degrees of north latitude. The trees are planted four or five feet asunder; they have a very stunted appearance; and are not allowed to grow higher than is convenient for men, women, and children to pick the leaves. When this is done, the leaves are put into wide shallow baskets, placed on shelves in the air, or wind, or mild sunshine, from morning till noon; then on a flat cast-iron pan over a charcoal stove, ten or twelve ounces of leaves are thrown at a time, stirred quickly with a hand-broom, and then brushed off again into the baskets, in which they are equally and carefully rubbed between men's hands to roll them; after which they are again dried over a slower fire. The tea is then laid upon a table to be drawn or picked over.—To make singlo, or hyson, the first two gatherings are chosen, and as soon as picked from the trees are put into the pan; next rolled and spread thin, to separate the leaves, which adhere to each other; again well dried, spread, sifted, picked, and roasted two or three times more before it is in a marketable state. In no country of Europe is tea imported in such perfection as in Russia. Conveyed by land through the medium of the large fairs at Ladak and Nijin Novgorod, it retains the virtue of which a sea-voyage is said to deprive it; while its flavour is much enhanced by the leaves of the *olea fragrans*, with which the Chinese pack it for a land journey. It is also said, that the tea grown in the districts from which the Russians alone are allowed to draw their teas, is of a finer flavour owing to the superior fitness of the soil.

TEAK-TREE *(tectona grandis)*, one of the largest trees known; it may be regarded as the oak of the Eastern world, and the only Indian wood impenetrable by the white ants. It is strong, light, and easily wrought at all ages; and is much used in building ships as well as houses. This tree abounds in the extensive forests of Java, Ceylon, Malabar, Coromandel, &c., but especially in the empires of Birmah and Pegu, from which countries Calcutta and Madras draw all their supplies of ship timber.

TEARS, the limpid fluid secreted by glands adjoining the eye, and increased by emotions of the mind, but more especially by grief. This fluid is also called forth by any injury done to the eye. Tears serve to moisten the cornea and preserve its transparency, as well as to remove any dust or other substance that enters the eye. The organ which secretes this liquid is the lachrymal gland, one of which is situated in the external canthus of each orbit, and emits six or seven excretory ducts, which open on the internal surface of the upper eyelid, and pour forth the tears.——*Tears*, in chemistry, any fluid falling in drops, as gums or resins exuding in the form of tears.

TEBETH, the tenth month of the Jewish ecclesiastical year, and fourth of the civil. It answers to our month of December.

TECHNOLOGY, a treatise on the arts; or an explanation of the terms of the arts. A *technical* word is a word that belongs properly or exclusively to the arts; and when speaking of the terms of art, we say *technical* terms, *technical* language, &c.

TE DEUM, the title of a celebrated hymn used in the Christian church, and so called because it begins with the words, *Te Deum laudamus*; We praise thee, O God. It is sung in the Roman Catholic churches with great pomp and solemnity, on occasions of joyful thanksgiving.

TEETH, in anatomy, small bones fixed in the alveoli of the upper and under jaw. In early infancy, when the softest aliment is required, the gums alone are sufficient; but as we advance in years, teeth are required to masticate the food which then becomes necessary for our subsistence

REAL TEA DIFFERS FROM THE SLOE-LEAF IN BEING NARROWER, SHARPER POINTED, MORE DEEPLY NOTCHED AT THE EDGES, AND OF A LIGHTER COLOUR.

FREQUENT ADDITIONS OF BOILING WATER TO TEA ARE BEST, AS NO MORE WATER THAN THAT IMMEDIATELY IN CONTACT WITH THE HERB CAN ACT ON IT.

SIR JAMES SOUTH'S TELESCOPE OF TWENTY FEET FOCAL LENGTH, IN HIS OBSERVATORY AT KENSINGTON, HAS FLINT-GLASS LENSES 12 IN. IN DIAMETER.

Pasley in 1822, has two arms, each of which can exhibit seven positions, with an indicator or mark on one side of the post, for the purpose of distinguishing the positions more accurately. A series of telegraphs are placed at intervals, and information is thus communicated with great rapidity. Twenty-seven telegraphs convey information from Paris to Calais in three minutes; twenty-two from Paris to Lisle in two minutes; forty-six from Strasburg to Paris in six and a half minutes, and eighty from Paris to Brest in ten minutes. At the time of the French expedition to Algiers, *nocturnal telegraphs* were erected, with lanterns of powerful magnifying glasses, and strong reflectors, and lighted with gas.—But a more singular kind of telegraph now demands our notice, namely, the *Galvanic or Electrical Telegraph at the Great Western Railway*, the invention of Professor Wheatstone.—The space occupied by the case containing the machinery (which simply stands upon a table, and can be removed at pleasure to any part of the room) is little more than that required for a gentleman's hat-box. The telegraph is worked by merely pressing small brass keys, similar to those on a keyed bugle, which acting by galvanic power upon various hands placed upon a dial-plate at the other end of the telegraphic line, point not only to each letter of the alphabet (as each key may be struck or pressed), but the numerals are indicated by the same means, as well as the various points, from a comma to a colon, with notes of admiration and interjection. There is likewise a cross (x) upon the dial, which indicates that when this key is struck a mistake has been made in some part of the sentence telegraphed, and that an erasure is intended. A question, such, for instance, as the following, "How many passengers started from Drayton by the ten o'clock train?" and the answer, could be transmitted from the terminus to Drayton and back in less than two minutes. There are wires communicating with each end passing through a hollow iron tube, not more than an inch and a half in diameter, which is fixed about six inches above the ground, running parallel with the railway, and about two or three feet distant from it. It is said to be the intention of the Great Western Railway Company to carry the tube along the line, and ultimately throughout the whole distance to Bristol. The machinery and the mode of working are so exceedingly simple that a child who could read would be enabled efficiently to transmit and receive information. We hear that the principal objection which has been made to these telegraphs is the difficulty of repairing the wires when broken or damaged; but this, it is said, can be obviated by means of a small carriage moved along the line of the telegraph. The place where the defect lies is indicated by a magnetic needle, which changes its position the instant it arrives at the part where the connection is broken; and the inventor believes it to be quite possible to communicate with it between Dover and Calais!

TEL'ESCOPE, an optical instrument employed in viewing distant objects, as the heavenly bodies. It assists the eye chiefly in two ways; first, by enlarging the visual angle under which a distant object is seen, and thus magnifying that object; and secondly, by collecting and conveying to the eye a larger beam of light than would enter the naked organ, and thus rendering objects distinct and visible which would otherwise be indistinct or invisible. Telescopes are either *refracting* or *reflecting*; the former consist of different lenses through which the objects are seen by rays refracted by them to the eye, and the latter consist of specula from which the rays are reflected and passed to the eye. The lens turned towards the object is called the *object-glass*; and that to which the eye is applied, the *eye glass*; and if the telescope consist of more than two lenses, all but the *object-glass* are called *eye-glasses*. The invention of the telescope, like most other inventions, appears to have dawned upon mankind by gentle degrees. A simple tube, formed by the hand, was found to direct the view, or render it more distinct by singling out the object to be examined, and defending the eye against the rays reflected from others. The experience of this fact led to the use of more efficacious tubes, formed of some convenient material. In the thirteenth century, a manuscript was adorned with a picture of Ptolemy in the act of observing the stars through a tube of four joints or draws: but it was not till the middle of the 16th century (1549), so far as any records evince, that the use of glasses in this instrument was discovered. In fact, no advances were made in the construction of telescopes before the time of Galileo, who, while at Venice, accidentally heard that a sort of optic glass was made in Holland, which brought distant objects nearer; and considering how this thing might be, he set to work and ground two pieces of glass into a form, as well he could, and fitted them to the two ends of an organ pipe, with which he produced an effect that delighted and astonished all beholders. After exhibiting the wonders of this invention to the Venetians on the top of the tower of St. Mark, he devoted himself wholly to the improving and perfecting the telescope, in which he was so successful that it has been usual to give him the honour of being the inventor.—Great have been the improvements which since that time have been made in the construction of telescopes. Herschel's gigantic telescope, erected at Slough, near Windsor, was completed August 28, 1789; and on the same day the sixth satellite of Saturn was discovered. The diameter of the polished surface of the speculum was forty eight inches, and its focal distance forty feet. It weighed 2118 pounds, and was placed in one end of an iron tube four feet ten inches in diameter. The largest front-view telescope, at present in England, is that erected at the royal observatory at

SIR J. W. HERSCHEL HAS A REFLECTING TELESCOPE OF TWENTY FEET, WITH WHICH HE SEES COMETS THAT NO OTHER IN EUROPE CAN RENDER VISIBLE.



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It is there stated, that upwards of *two millions five hundred and thirty thousand* individuals have already *pledged* themselves "to abstain from all intoxicating drinks," &c., and that there is every reason to believe that drunkenness and its kindred vices in Ireland will, ere long, be succeeded by industrious habits and their concomitant results.]

TEM'PERATURE, in physics, a definite degree of sensible heat, as indicated by the thermometer; or the constitution of the air according to the diversity of the seasons or difference of climate, &c. When a body applied to another, either excites the sensation of heat, or expands that body, we say it is of a *higher temperature;* when it excites the sensation of cold, or contracts another body, it is said to be of a *lower temperature*. The annual variation of heat is inconsiderable between the tropics, and becomes greater and greater as we approach the poles. This arises from the combination of two causes, namely, the greater or less directness of the sun's rays, and the duration of their action, or the length of time from sunrise to sunset.

TEM'PERATE ZONE, in geography, the space on the earth between the tropics and the polar circles, where the heat is less than in the tropics, and the cold less than in the polar circles.

TEM'PEST, a storm of excessive violence. [See STORMS.]

TEM'PLARS, or KNIGHTS OF THE TEMPLE, a religio-military order, established at Jerusalem, A.D. 1118, for the protection of pilgrims travelling to the Holy Land. During nearly six hundred years, this order maintained an important character in Europe. In every nation it had a particular governor, called *master of the Temple*, or of the *militia of the Temple*. Its riches became immense; a fact which, among many others, justifies the observation of Raynal, that persons who have laid down rules for religious societies have done so with the sole view of making holy men; but that they have laboured more directly and more effectually to make rich ones. Towards the beginning of the seventeenth century the Templars were charged with leaning to Mohammedanism; and, in consequence, the order was abolished under pope Clement V., Edward II. of England, and Philip the Fair of France. In 1307, all the members in England were arrested, and of these, seven suffered at the stake. In 1312, the final suppression was effected by the council of Vienna, by the direction of which fifty others of these persecuted men suffered death in the flames.

TEM'PLE, a place of worship, chiefly applied to heathen worship. Originally temples were open places, as Stonehenge, in Wiltshire. In Rome, some of the temples were open, and called *sacella;* others were roofed, and called *ædes*. The most celebrated of the ancient pagan temples were those of Belus in Babylon, Vulcan at Memphis, Jupiter at Thebes, Diana at Ephesus, Apollo in Miletus, Jupiter Olympius in Athens, and Apollo at Delphi. The most celebrated and magnificent temple erected to the true God, was that built by Solomon in Jerusalem.——The *Temples*, in London, are two inns of court, so called because anciently the dwellings of the Knights Templars. They are called the Inner and the Middle Temple, and are situated near the Thames.——In anatomy, the name of the sides of the face above the ears, in which are the temporal arteries, veins, &c.

TEM'PO (Italian for *time*), signifies, in music, the degree of quickness with which a musical piece is to be executed. The different degrees of time are designated by the following terms: *largo, adagio, andante, allegro*, and *presto;* and the intermediate degrees are described by additions. [See these terms respectively.]

TEM'PORAL, belonging to secular concerns; not spiritual; as the *temporal* revenues of the church, called temporalities. *Temporal courts* are those which take cognisance of civil suits; *temporal power*, civil or political power.

TEMPORA'LIS, or TEM'PORAL, in anatomy, pertaining to the temples, as the *arteria temporalis* or temporal artery.

TENA''CITY, the degree of force with which the particles of bodies cohere or are held together; a term applied particularly to metals which may be drawn into wire, as gold and silver.

TENAIL', in fortification, an outwork consisting of two parallel sides with a front, in which is a re-entering angle. It is single or double.

TEN'AILLONS, in fortification, works constructed on each side of the ravelins, like the lunettes, but differing in this, that one of the faces of the tenaillon is in the direction of the ravelin, whereas that of the lunette is perpendicular to it.

TEN'ANT, in law, one who holds lands or tenements by any right or title, particularly one who occupies lands or tenements at a yearly rent, for life, years, or at will.—*Tenant in capite*, is one who holds immediately of the king. According to the feudal system, all lands in England are considered as held immediately or mediately of the king, who is styled lord paramount. Such tenants, however, are considered as having the fee of the lands and permanent possession.

TENCH, in ichthyology, a fish of the genus *Cyprinus*, found in ponds and rivers. It is distinguished by the diminutive size of the scales, its golden body, and transparent fins. The body is short and thick, the head large, and the lips thick.

TEN'DER, a small vessel employed to attend a larger one for supplying her with provisions or naval stores, or to convey intelligence, &c.——In law, an offer either of money to pay a debt, or of service to be performed, in order to save a penalty or forfeiture which would be incurred by non-payment or non-performance.

TEN'DO ACHIL'LIS, or *Tendon Achilles*, in anatomy, the tendon which connects the calf of the leg with the heel. It was so called,



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animals formed part of the sacrifice.—— *Terminalia*, in botany, a genus of plants, class 22 *Polygamia*, order 1 *Monoecia*.

TER'MINI, in architecture, figures used by the Romans for the support of entablatures, in the place of columns: the upper part consisted of the head and breast of a human body, and the lower of the inverted frustum of a cone. They were so called because they were principally used as boundary marks, and represented their god Terminus, whose altar was on the Tarpeian rock, where he was represented with a human head, without feet or arms, to intimate that he never moved, wherever he might be placed.

TERMINOL'OGY, that branch of a science or art which explains the meaning of its technical terms. In some sciences it is of particular importance; in botany, for instance, where not even a leaf can be described without an agréement on certain technical terms.

TERMINTHUS, in surgery, a large painful tumour on the skin.

TER'NATE, in botany, an epithet for a leaf that has three leaflets on a petiole, as in trefoil, strawberry, bramble, &c. There are leaves also *biternate* and *triternate*, having three ternate or three biternate leaflets. ——*Ternate bat*, in zoology, a species of bat of a large kind, found in Ternate and other East-Indian isles.

TER'RACE, a platform or bank of earth raised and breasted, particularly in fortifications. Also, a raised walk in a garden, having sloping sides laid with turf.

TER'RA COTTA, in the arts, the name given to a very large class of remains of antiquity modelled in clay, many admirable specimens of which have been discovered in Tuscany and Rome. They consist of lamps and vessels of various kinds, besides entire figures and reliefs, some of which display the talents of the sculptor or modeller in no ordinary degree. *Terra cotta* is literally "baked clay;" and the various articles so named, of modern manufacture (some of which are extremely tasteful), are modelled or cast in a paste made of pipe or potter's clay and a fine-grained colourless sand, from Ryegate, with pulverised potsherds, slowly dried in the air, and afterwards baked in a kiln.

TER'RA DI SIE'NA, a brown ferruginous ochre, employed in painting.

TER'RA FIR'MA, the main land; the name particularly given to a country of South America, extending from the Atlantic to the Pacific ocean to the extent of 1300 miles.

TER'RA JAPON'ICA, Japan earth, the inspissated juice of a species of acacia.

TER'RA *a terra*, in horsemanship, a series of low leaps which a horse makes forwards, bearing sideways, and working upon two treads.

TER'RÆ, in mineralogy, Earths; one of the classes into which mineral substances have been mostly divided.

TER'RÆ FIL'IUS, a scholar at the university of Oxford, formerly appointed to make jesting satirical speeches. Surely there must have been a great deal more of gravity in a college life formerly than at present, or else an inordinate love of mirth, to render such an appointment necessary: for (with all due deference be it spoken) though the children of Minerva abound in that classic region, there never appears to be any scarcity of the sons of Momus. Nay, how many grave divines are there, and noble lords, spiritual as well as temporal, who, in their hours of relaxation, set the table in a roar with their long-cherished Oxonian reminiscences, and delight to dwell on choice facetiæ gleaned in those claustral palaces that grace the banks of Isis!

TERRE-VERTE, in mineralogy, a species of green earth used by painters. It is an indurated clay, found in the earth in large flat masses, imbedded in strata of other species of earth. It is of a fine regular structure, and of a smooth glossy surface.

TER'TIAN, in medicine, an ague or intermitting fever, the paroxysms of which return every other day.

TERTIARY FORMATIONS, in geology, a series of horizontal strata, more recent than the chalk formation, consisting chiefly of sand and clay, and frequently embracing vast quantities of organic remains of the larger animals. It comprehends the *alluvial* formation, which embraces those deposits only which have resulted from causes still in operation; and the *diluvial* formation, which is constituted of such deposits as are supposed to have been produced by the deluge. [See GEOLOGY.]

TES'SELATED, formed in little squares or mosaic work, as, a *tesselated* pavement. ——In botany, spotted or checkered like a chess-board; as, a *tesselated* leaf.

TEST, in chemistry, a term applied to any substance which serves to detect the presence of a poisonous ingredient in a composition. Also, in metallurgy, a cupel or pot for separating base metals from gold or silver.

TESTA'CEOUS, pertaining to animals which have a strong, thick, and entire shell, as oysters; and thus distinguished from *crustaceous*, which pertains to all whose shells are more thin and soft, and consist of several pieces jointed, as lobsters, &c.—— *Testaceous medicines* are all preparations of shells and similar substances, as the powder of crabs' claws, pearl, &c.

TESTA'CEA, in natural history, an order of the class *Vermes*, of which there are thirty-six genera. The animal is *molluscous*, that is, of a soft nature, and simple structure, covered with a calcareous habitation or shell. The shell has been considered as analogous to the bones of animals, although its formation and growth are very different, since it serves as a base or support to the muscles, which are attached to its internal surface. The principal use of the shell is, however, to serve as a covering or defence to the animal. Testaceous animals are not only extremely different in external form, but also in the mode of their



WORKS EXECUTED IN TERRA COTTA HAVE BEEN PRESERVED THREE THOUSAND YEARS AS FRESH AS WHEN FIRST PRODUCED.

MANY SPECIMENS OF ANCIENT TESSELATED PAVEMENTS HAVE BEEN DUG UP IN ITALY, ENGLAND, AND OTHER COUNTRIES.

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course exclusive of any note or commentary. Also, a certain passage of scripture, chosen by a preacher to be the subject of his sermon.—*Text-book*, a book containing the leading principles or most important points of a science or branch of learning, arranged in order for the use of students.

TEX'TILE, an epithet given to whatever is woven or capable of being woven. *Textile fabrics* accordingly signify stuffs of every description, no matter what the materials may be of which they are composed.

THAM'MUZ, the tenth month of the Jewish civil year, containing 29 days, and answering to a part of June and a part of July.

THANE, the name of an ancient rank among the English or Anglo-Saxons; but after the Norman conquest this title was disused, and *baron* took its place.

THE'A, in botany, the systematic name of the Tea-tree.

THE'ATRE, a building for the exhibition of dramatic performances, as tragedies, comedies, and farces; comprehending the stage, the pit, boxes, galleries, &c. The first royal licence for a theatre in England was granted in 1757, to James Burbage and four others, servants to the earl of Leicester, to act plays at the Globe, Bankside, or in any part of England; but long before their time *miracles* were represented in the open fields. Dramatic exhibitions of all kinds were opposed by the Puritans in 1633, and suspended till 1660, when Charles II. licensed two companies, Killegrew's and Davenant's; the first at the Bull, Vere-street, Clare-market, which in a year or two was removed to Drury-lane; the other was in Dorset-gardens. Till that time boys performed women's parts. Sir William Davenant introduced operas, and both companies united, 1684, and continued together till 1694; when, from the reduced salaries given to the performers, the principal of them, under Betterton, obtained a licence, and withdrew to Portugal-street, Lincoln's-inn-fields, in 1696.—The most ancient theatres in Greece and Rome were temporary, being composed of boards placed gradually above each other for the convenience of spectators. The improvements of the theatre, however, kept pace with dramatic taste, and they were eventually built in a handsome and durable manner, rivalling in size and splendour the most costly edifices. [See DRAMA.]

THE'ISM, the belief or acknowledgment of the existence of a God, as opposed to *atheism*. It has sometimes been defined to be deism; but *theism* differs from *deism*, for although deism implies a belief in the existence of a God, yet it signifies in modern usage a denial of revelation, which *theism* does not.

THEOC'RACY, a state governed by the immediate direction of God; as was the government of the Jews before the time of Saul.

THEOD'OLITE, a mathematical instrument much used in surveying, for the taking of angles, distances, &c.

THEOG'ONY, that branch of the heathen theology which taught the genealogy of their gods.

THEOLO'GIUM, in the ancient theatre, a kind of little stage, above that whereon the ordinary actors appeared; being the place where the machinery of the gods was arranged.

THEOL'OGY, the study of religion, or the science which instructs in the knowledge of God and divine things. Theology consists of two branches, *natural* and *revealed*. *Natural theology* is the knowledge we have of God from his works, by the light of nature and reason. *Revealed* or *supernatural theology*, is altogether founded on divine revelation. Natural religion alone is not suited to our circumstances, for it holds out no hope to the guilty, and in the present feeble and corrupt state of our moral powers, its duties are absolutely impracticable.—There are several other branches into which theology may be divided,—as, 1. *Exegetical theology*, which consists in the explanation and interpretation of the scriptures. 2. *Didactic* or *speculative* theology, by which the several doctrines of religion are stated and explained, and their truth established. 3. *Systematic theology*, which arranges methodically the great truths of religion, so as to enable us to contemplate them in their natural connexion, and to perceive both the mutual dependence of the parts, and the symmetry of the whole. 4. *Practical theology*, which consists of an exhibition, first, of precepts and directions; and, secondly, of the motives by which we should be excited to comply with these; and both these rules and these motives may be either found expressly revealed in scripture, or they may be inferences from what it teaches.

THEOM'ANCY, a species of prophecy in which a god himself was believed to reveal future events.

THEOPHILAN'THROPISTS, the title assumed by a deistical society formed at Paris during the French revolution. The object of its founders was to revive public religious ceremonies, which had altogether ceased during the reign of terror, without returning to the rites and ceremonies of Christianity. The revival of the Catholic religion hastened the decline of the society, and in 1802 the consuls prohibited them from holding their meetings in the churches.

THEOR'BO, a musical instrument made in form of a large lute, except that it has two necks. It is used by the Italians for playing a thorough bass.

THE'OREM, in mathematics, a speculative proposition deduced from several definitions compared together; a proposition to be proved by a chain of reasoning.—In algebra or analysis, it is sometimes used to denote a rule, particularly when that rule is expressed by symbols. A *universal theorem*, extends to any quantity without restriction. A *particular theorem* extends only to a particular quantity, as a *negative theorem* expresses the impossibility of any assertion.

THE MAGNIFICENT THEATRE OF MARCUS AMILIUS SCAURUS, A CONTEMPORARY OF CICERO, WOULD CONTAIN 80,000 PERSONS.

DISTINCTIONS OF RANKS IN THE AUDITORY WAS AS EVIDENT IN THE GREEK AND ROMAN THEATRES AS IN OUR PROVINCIAL TOWNS.



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theory of tides. But, in the development of the vast system of universal gravitation, Newton clearly saw that it would be utterly in vain for him to attempt following out the principle into all the varied and complicated results to which it led. He contented himself with verifying all its great leading points, and leaving the minuter details to his successors. That is to say, all the apparent irregularities in the progress of the tide-wave, all the variations in the time of high water at different places, all the particular effects of the obstructions occasioned by the varied forms of continents, and the changes in the depth of the sea, were to be examined and described; and then again the theory was to be brought to bear upon them, so as to show whether it would afford a satisfactory explanation; and thus the whole series of phenomena, not only in their grander features, but even up to their lesser details, be all susceptible of explanation on the one comprehensive and pervading principle of *gravitation*.—The extreme practical importance of a correct knowledge of the tides on coasts and in harbours, has in many places led to the prosecution of some sort of regular observations, to determine what is called the establishment of particular ports. This means the interval of time after the new and full moon passing the meridian, at which it is high water there; from this the time of high water on other days is known from the age of the moon. Much has been done of late years to arrive at this knowledge, particularly by Mr. Whewell, whose profound and elaborate researches, aided by the ready assistance and co-operation his inquiries have met with, not only from the British government but from various foreign powers, have thrown much new light on this very interesting subject.

TIERCE, in heraldry, an epithet for the field when it is divided into three acres. Also, a liquid measure containing 42 gallons.

TIERS ETAT [Fr.], *third estate*. This term was universally applied in France to the mass of the people under the old *regime*. Before the cities rose to wealth and influence, the nobility and clergy possessed the property of almost the whole country, and the people were subject to the most degrading humiliations; but as trade and commerce began to render men independent, and they were able to shake off their feudal bonds, the *tiers état* gradually rose into importance; and at length the third estate, during the revolution, may be said to have become the nation itself.

TIGER, in zoology, a fierce and rapacious animal of the genus *Felis*. It is a native of the East Indies and some other parts of Asia; but wherever it is known, its strength and sanguinary disposition are such as to excite the terror of the inhabitants. It comes into the midst of villages in the night time, for the purpose of carrying off cattle, and it has often been known to single out for prey some human victim. No animal, except the elephant, is capable of resisting it. It is of a yellowish brown colour, with transverse black stripes; and the tail has alternate black and yellow rings. It resembles the other animals of the cat tribe, and can be tamed as easily as the lion.

TIL'LAGE, the art and practice of cultivating the ground by ploughing, harrowing, rolling, and whatever other operations are necessary to render the soil productive.

TIL'LER *(of a ship)*, a lever or piece of wood fastened in the head of the rudder, by which it is moved. In small ships and boats it is called the *helm*.——*Tiller-rope*, the rope which forms a communication between the fore end of the tiller and the wheel.

TIM'BER, a name for all kinds of wood to be used in building, carpentry, joinery, turnery, &c. We also apply the word to standing trees which are suitable for these purposes; as, a forest contains excellent *timber*; or, to the beams, rafters, planks, &c. hewed or sawed from such trees.——In ships, a *timber* is a rib or curving piece of wood, branching outward from the keel in a curving direction.

TIM'BREL, an ancient musical instrument; a kind of tabor or tambourine, frequently mentioned in scripture.

TIME, a portion of duration, whether past, present, or future; marked by certain periods or measures, chiefly by the motion and revolution of the sun. The idea of time, Mr. Locke observes, we acquire by considering any part of infinite duration as set out by periodical measures: the idea of any particular time, or length of duration, as a day, an hour, &c. we acquire first, by observing certain appearances at regular, and seemingly at equidistant periods. Now, by being able to repeat those lengths or measures of time, as often as we will, we can imagine duration where nothing really endures or exists; and thus we imagine to-morrow, next year, &c. Time is either *astronomical* or *civil*; *astronomical* when considered with respect to the motion of the heavenly bodies only; and *civil*, when considered with reference to the subdivisions of centuries, years, months, days, hours, minutes, and seconds, which have been adapted to this or that portion of mankind.——*Time*, in music, the measure of sounds in regard to their continuance or duration; as, *common time*, and *triple time*.

TIMOC'RACY, that form of government whose laws require a certain property to enable a citizen to be capable of the highest offices.

TIN, a metal of a silver-white colour, very ductile and malleable. It gives out, while bending, a crackling noise; is fusible at a heat much less than that of ignition; is soluble in muriatic acid, and, by dilute nitric acid, is rapidly converted into a white oxyde. Tin has been known from the earliest ages. It appears to have been in common use in the time of Moses. It was much employed by the Egyptians in the arts, and by the Greeks as an alloy with other metals. Pliny speaks of it under the name of white lead, as a metal well known



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TOBACCO IS MILD IN FLAVOUR IN PROPORTION TO THE HEAT OF THE CLIMATE IN WHICH IT IS CULTIVATED.

THE NARCOTIC EFFECT PRODUCED BY SMOKING TOBACCO APPEARS TO BE THE ONLY RATIONAL GROUND FOR CALLING IT AN AGREEABLE RECREATION.

walls, hollow trees, in the earth, or even when artificially enclosed with plaster. That celebrated geologist, professor Buckland, however, states, in reference to a number of experiments which he made on the vitality of toads enclosed in wood and stone: "it seems that toads cannot live a year excluded totally from atmospheric air, and that they cannot survive two years entirely excluded from food: and there is a want of sufficiently minute and accurate observation in those so frequently recorded cases, where toads are said to be found alive within blocks of stone and wood, in cavities that had no communication whatever with the external air."

TOAD'-STONE, in mineralogy, a dark brown basaltic amygdaloid, composed of basalt and green earth, and containing oblong cavities containing calcareous spar.

TOAD'STOOL, a sort of fungous plant that grows in damp places like a mushroom.

TOBAC'CO (*Nicotiana tabacum*), in botany, an herbaceous plant which flourishes in America and all temperate climates, and is remarkable for its acrid and narcotic properties. It is much used for smoking, and, when pulverised and otherwise prepared, as snuff. When first used it sometimes occasions vomiting; but the practice of using it in any form soon conquers distaste, and forms a relish for it that is strong and almost unconquerable. It may well excite astonishment, that the discovery in America of a nauseous and poisonous weed, of an acrid taste and disagreeable odour, in short, whose only properties are deleterious, should have had so great an influence on the social condition of all nations, that it should have become an article of most extensive commerce, and that its culture should have spread more rapidly than that of the most useful plants! The plant is glutinous, and covered with a very short down; the stem upright, four or five feet high, and branching; the leaves are alternate, sessile, oval-oblong, and entire on the margin; the flowers disposed in a terminal panicle; the tube of the corolla long, inflated towards the summit, and dividing into five acute, angular, spreading lobes, of a rose colour. Tobacco is extensively cultivated in France and other European countries, in the Levant and India; but the tobacco of the United States is considered the best.

TO'GA, in antiquity, a robe without sleeves, worn by the Roman citizens in time of peace. It was like a large cloak, and worn over the *tunica*, and was the distinguishing badge of a Roman citizen. The variety in the colour, the fineness of the wool, and the ornaments attached to it, indicated the rank of the wearer. Under the emperors the toga went out of fashion.

TOISE, a fathom or long measure in France, containing six feet.

TOKAY', a kind of wine produced at Tokay in Hungary, made of white grapes. It is distinguished by its aromatic taste; is not considered good till it is three years old, and it continues to improve as long as it is kept.

TOLERATION, in a general sense, the allowance of that which is not wholly approved; but more especially, the allowance of religious opinions and modes of worship in a state, when contrary to or different from those of the established church or belief.

TOMA'TO, or LOVE APPLE, in botany, a plant and its fruit, a species of *Solanum*. It was originally brought from South America, but is now cultivated in many other parts, for the sake of its large scarlet or orange-coloured fruit, which many esteem a great luxury. The tomato is one of the most common articles in Italian cookery, and its use is rapidly increasing in England.

TOM'BAC, in mineralogy, a white alloy of copper; a metallic composition made by mixing and fusing together a large quantity of zinc with a smaller quantity of copper, with arsenic.

TOMENTOUS, in botany, downy; or covered with hairs so close as scarcely to be discernible; as, a *tomentous* stem.

TONE, the degree of elevation which any sound has, so as to determine its acuteness or gravity.—*Musical tones* differ from those of common speech chiefly by being more prolonged, so as to give the ear a more decided perception of their height, formation, and relation to each other. There are two kinds of tones, major and minor. The *tone major* is in the ratio of 8 to 9, which results from the difference between the fourth and fifth. The *tone minor* is as 9 to 10, resulting from the difference between the minor third and the fourth.—*Tone*, in medicine, is that state of organization in a body, in which the animal functions are healthy and performed with due vigour. *Tone*, in its primary signification, is *tension*, and tension is the primary signification of strength. Hence its application to the natural healthy state of the animal organs.

TONGUE, in anatomy, a soft, fleshy viscus, very movable in every direction, situated interiorly in the cavity of the mouth, and constituting the organ of taste. It is also an instrument of deglutition.—*Tongue*, figuratively, a language; the whole sum of words used by a particular nation; as, our mother *tongue*, the English *tongue*, &c.

TON'IC, in music, the first or fundamental note of the diatonic scale, and, in general, the fundamental and key-note of every piece.

TON'ICS, medicines that increase the tone of the muscular fibre, and give vigour and action to the system.

TON'SILS, in anatomy, two remarkable glands, one on each side of the mouth, near the uvula, and in popular language called *almonds of the ears*. Their use is to secrete a mucous humour for lubricating the passages; and have several excretory ducts opening into the mouth.

TON'TINE, a sort of increasing life annuity, or a loan given by a number of per-



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applied to a class of depredators in that country; but the distinctions of *Tory* and *Whig* (as political partisans) were not known before the year 1678, in the reign of Charles II., when those who believed that the Catholics conspired against the king and state, as deposed by Titus Oates, were called *Whigs*, and those who disbelieved it, *Tories*. Of late years the term *Conservatives* has been adopted by the Tories, as tending to convey the best explanation of their principles.—Several fanciful derivations of the words Whig and Tory have occasionally appeared, but we never saw a satisfactory one.

TOU'CAN, in ornithology, a tropical bird, of the genus *Ramphastos*, remarkable for the great size of its beak.

TOUCH, or FEEL'ING, one of the five senses, which is formed by the nervous papillæ of the skin. The term *touch* is most correctly applied to the sensibility which is diffused over the surface of the body. Touch exists with the most exquisite degree of sensibility at the extremities of the fingers and thumbs, and in the lips.——*Touch*, in music, the resistance of the keys of an instrument to the fingers; as, a heavy *touch*, or light *touch*.

TOUCH'-NEEDLE, small bars of gold, silver, and copper combined together in all the different proportions and degrees of mixture. These are used by assayers and refiners, in the trial called the *touch*, to discover the purity of any piece of gold or silver by comparing the mark it leaves on the touchstone with those of the bars.

TOUR'MALINE, in mineralogy, a siliceous stone, of various colours, sometimes translucent as a gem by jewellers, and remarkable for exhibiting electricity by heat or friction. It occurs in long prisms, deeply striated; and is considered a variety of shorl.

TOUR'NAMENTS, martial sports, where knights used to display their gallantry and adroitness, by encountering each other on horseback with spears or lances. "Impartial taste," says Gibbon, "must prefer a Gothic tournament to the Olympic games of classic antiquity. Instead of the naked spectacles, which corrupted the manners of the Greeks, the pompous decoration of the lists was crowned with the presence of chaste and high-born beauty, from whose hands the conqueror received the prize of his dexterity and courage."—One solitary attempt to imitate the jousts and tournaments of former days was lately made, at the expense of the earl of Eglintoun; but the burlesque was apparently too extravagant, if not too costly, for repetition.

TOUR'NIQUET, or TOUR'NEQUET, a surgical instrument for stopping the flow of blood after an amputation. It is a kind of bandage, straitened or relaxed with a screw.

TOW'ER, in architecture, a building raised to a considerable elevation, and consisting of several stories. Towers are either round or square, and flat on the top, by which they are distinguished from spires or steeples. Before the invention of guns, places were not only fortified with towers, but attacked with movable towers mounted on wheels, which placed the besiegers on a level with the walls.——*Tower of London*. This ancient edifice, which stands on the north bank of the Thames, at the eastern extremity of the city, was built by William I. on the site of a fortress erected by the Romans. A moat, of considerable width and depth, proceeds northward on each side of the fortress, and meets in a semicircle on the banks of the river. Cannon are planted at intervals round the line, and command every avenue leading to Tower-hill. The space enclosed by the walls measures twelve acres five roods, and the circumference on the outside of the ditch is 3156 feet. On the south side of the Tower is an arch called the *traitor's gate*, through which state prisoners were formerly brought from the river. Near the traitor's gate is the *bloody tower*, in which it is supposed the two young princes, Edward V. and his brother, were smothered by order of Richard III. In the south-east angle of the enclosure were the royal apartments; for the Tower was a royal palace for nearly 500 years, and only ceased to be so on the accession of queen Elizabeth. The principal buildings within the walls are the church, the white tower, the ordnance office, the old mint, the record office, the jewel office, the horse armoury, the grand storehouse,—in which is the small armoury,—the lion's tower, and the Beauchamp tower. The *white tower*, a large, square, irregular building, erected in 1070, consists of three stories. On the first story are the sea armoury, consisting of muskets for the sea-service, and other warlike instruments of every description, and the volunteer armoury, for 30,000 men. The horse armoury is a brick building, east of the white tower, adorned with suits of armour of almost every description; but the most striking are the effigies of the English kings on horseback, armed *cap-a-pie*. The line commences with William the Conqueror, and extends to George II. Several of the cuirasses and helmets taken at Waterloo are also kept there. The grand storehouse, north of the white tower, about 345 feet in length and 60 in breadth, was begun by James II. and finished by William III. The upper story is occupied by the small armoury, containing arms for about 200,000 men, all kept in admirable order. The Spanish armoury is principally occupied by the trophies taken from the Spanish armada, such as thumb-screws, boarding-pikes, battle-axes, &c. Here also, as in other parts of the fortress, are numerous historical curiosities. The above sketch includes only the main features of this ancient building; but as the fees for viewing the whole, which were formerly exorbitant, are now a mere trifle, those who visit London should avail themselves of an opportunity of witnessing it.



TOXICOL'OGY, the science of poisons and their antidotes; a study which requires more consideration than has been gene-



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A BELIEF IN TRANSMIGRATION LED THE ANCIENT EGYPTIANS, AS IT STILL DOES THE HINDOOS, TO THE VENERATION OF CERTAIN ANIMALS.

which the practical is separated."——*Transcendental quantities*, in geometry, are indeterminate ones, or such as cannot be expressed or fixed to any constant equation.——*Transcendental curve*, such a curve as cannot be defined by any algebraic equation.

TRAN'SCRIPT, a copy of any original writing, particularly that of an act or instrument inserted in the body of another. The title to land must be transferred by deed.

TRAN'SEPT, in architecture, the aisle of ancient churches, extending across the nave and main aisles.

TRANSFER, in commerce, an act whereby a person surrenders his right, interest, or property in anything to another.

TRANSFU'SION, in medicine, the act or operation of transferring the blood of one animal into the vascular system of another by means of a tube.

TRAN'SIT, in astronomy, the passage of the inferior planets, Venus or Mercury, over the sun, by observing which at distant places, the angular size of the earth at the sun is determined, and, consequently, its distance. When a smaller body passes behind a larger, it is said to suffer an *occultation*.

TRANSI'TION, in rhetoric, is of two kinds. The first is when a speech is introduced abruptly; as when Milton gives an account of our first ancestors' evening devotions:—

Both turn'd, and under open sky adored
The God that made both air, sky, earth and heaven.—
——Thou also madest the night,
Maker omnipotent, and Thou the day.

The second is when a writer suddenly leaves the subject he is upon, and passes to another, from which it seems different at first view, but serves to illustrate it.——In music, a change of key from major to minor, or the contrary.

TRANSI'TION ROCKS, the lowest in which are found organized beings, but these consist only of zoophytes, or equivocal animals, and shell-fish, while the rocks above these contain animals possessed of sight and locomotion, and the still more modern ones contain perfect animals. These rocks are supposed to have been formed when the world was passing from an uninhabitable to a habitable state. [See GEOLOGY, ORGANIC REMAINS, &c.]

TRAN'SITIVE, in grammar, an epithet for a verb expressing an action which passes from the agent to an object, from the subject which *does*, to the object on which it is *done*.

TRANSLU'CENT, in mineralogy, an epithet by which is designated the power of transmitting rays of light, but not so as to render objects distinctly visible.

TRANSMIGRATION, the Pythagorean doctrine of the passing of the soul from one body into another. A belief in this, under various modifications, has existed in different ages of the world, and by various nations. This belief in the transmigration of the soul, as a means of purification and penance, may have been attended with good consequences in certain states of society; but the Christian is content to leave undrawn the veil which the Creator has placed over the particular circumstances of our future condition.

TRANSMUTATION, the change of one substance into another of a different nature. The transmutation of base metals into gold was one of the dreams of alchemy.——In chemistry, the transmutation of one substance into another is both easy and common; as of water into gas or vapour, or *vice versâ*.——In geometry, the change or reduction of one figure or body into another of the same area or solidity, but of a different form; as of a triangle into a square.

TRAN'SOM, in architecture, a lintel over a door, or the piece that is framed across a double light window.——In a ship, the beam or timber extended across the stern-post, to strengthen the aft part and give it due form.

TRANSPOSITION, in algebra, the bringing any term of an equation over to the other side.——*Transposition*, in grammar, a change of the natural order of words in a sentence.——*Transposition*, in music, a change in the composition, either in the transcript or the performance, by which the whole is removed into another key.

TRANSUBSTANTIATION, in theology, the supposed conversion or change of the substance of the bread and wine in the eucharist, into the body and blood of Jesus Christ. This is a main point in the Roman Catholic religion, and is rejected by the Protestants, the former maintaining the transubstantiation to be real, the latter only figurative; interpreting the text *hoc est corpus meum*, "this signifies my body;" but the council of Trent strenuously contended for the literal sense of the verb *est*, and say expressly, that in *transubstantiation*, the body and blood of Christ are truly, really, and substantially under the species of bread and wine.

TRANSUMPTION, a syllogism by concession or agreement, used where a question proposed is transferred to another; with this condition, that the proof of the latter should be admitted for a proof of the former.

TRAPE'ZIAN, in crystalography, having the lateral planes composed of trapeziums situated in two ranges, between two bases.

TRAPE'ZIUM, in geometry, a plane figure contained under four unequal right lines, none of them parallel.——In anatomy, a bone of the carpus.

TRAPEZOID', in geometry, an irregular solid figure having four sides, no two of which are parallel to each other. Also, a plane four-sided figure having two of the opposite sides parallel to each other.

TRAP-ROCKS, in geology, rocks characterized by a columnar form, or whose strata or beds have the form of stairs or steps. It is employed to designate a rock or aggregate in which hornblende predominates, but it conveys no definite idea of any one species; and under this term are comprehended

"IF THE SOULS OF MEN TRANSMIGRATE INTO SPECIES ANSWERING THEIR FORMER NATURES, SOME MEN MUST LIVE OVER MANY SERPENTS."—BROWNE.



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*lium*. Also, in agriculture, a name of the *Medicago tuputina*, a plant resembling clover, with yellow flowers, much cultivated for hay and fodder.

TRELLIS, in gardening, a structure or frame of cross-barred work, or lattice-work, used for supporting plants. This differs from *treillage*, which consists of light posts and rails for supporting espaliers, and sometimes for wall trees.

TREMOLITE, in mineralogy, a subspecies of straight-edged augite, and is of three kinds, asbestous, common, and glassy tremolite; all of a fibrous or radiated structure, and of a pearly colour. It is classed by Hatty with hornblende or amphibole.

TRENCHES, or *lines of approach*, in fortification, ditches cut in oblique zig-zag directions, to enable besiegers to approach a fortified place without being exposed to the fire of its cannon. Hence the terms "to open the trenches," to break ground for the purpose of carrying on approaches to a besieged place; "mount the trenches," to mount guard in the trenches, &c.

TREPANNING, in surgery, the operation of perforating the skull and taking out a piece, for relieving the brain from pressure, &c. The instrument used is called a *trepan*. [See TREPHINE.]

TREPHINE, in surgery, a more modern instrument than the *trepan* for performing the operation of trepanning. It is a circular or cylindrical saw, with a handle like that of a gimlet, and a little sharp perforator, called the centre-pin.

TRESPASS, in law, any violation of another's rights; as, the unlawfully entering on his premises; but when violence accompanies the act, it is called a trespass *vi et armis*.——In a moral sense, the transgression of any divine law or command is a *trespass*.

TRIAD, in music, the common chord, consisting of the third, fifth, and eighth.

TRIAL, in law, the examination of causes before a proper judge, which, as regards matters of fact, are to be tried by a jury; as regard matters of law, by the judge; and as regards records, by the record itself. [See LAW, JURY, &c.]

TRIANDRIA, one of the Linnæan classes, comprehending plants the flowers of which have three stamens, as the crocus, gladiole, valerian, &c.

TRIANGLE, in geometry, a figure of three sides and three angles. Triangles are either plane or spherical. A plane triangle is contained under three right lines; and a spherical one is a triangle contained under three arches of great circles of the sphere. Triangles are denominated, from their angles, right, obtuse, and acute. A right-angled triangle is that which has one right angle; an obtuse-angled triangle is such as has one obtuse angle; and an acute angled triangle is that which has all its angles acute.

TRIBUNE, in Roman antiquity, the title of various officers. *A Tribune of the people*, was chosen out of the plebeians to protect them against encroachments and oppressions of the patricians, and the attempts of the senate and consuls on their liberty. These tribunes were not, strictly speaking, magistrates, or invested with magisterial powers; but they exercised a great influence upon public affairs. They had the power of putting a negative on the decrees of the senate, and of arresting the proceedings of magistrates by their *veto*; and in process of time their influence was increased to such a degree, that they endangered the safety of the state.——*Military tribune*, an officer in the Roman army, who commanded in chief over a body of forces, particularly the division of a legion, consisting usually of about 1000 men.——The title of *tribune* was also given, as we observed above, to various other officers; as *Tribuni ararii*, tribunes of the treasury. *Tribuni fabricarum*, those who had the direction of the making of arms. Also, *Tribuni marinorum*, *Tribuni nolanorum*, *Tribuni voluptatum*, mentioned in the Theodosian code, as intendants of the public shows, and other diversions.—— *Tribune*, in the French houses of legislature, the pulpit or elevated place from which the members deliver their speeches, which they usually read, if of any considerable length. In general, only short replies are made *extempore*.

TRICAPSULAR, in botany, an epithet for such plants as have three capsules to each flower.

TRICLINIUM, a name given by the Greeks to the room where they supped, because three couches or beds were placed about the table. This name was adopted by the Romans as synonymous with *Cœnaculum*. *Triclinium* is sometimes used for the beds on which the guests reclined.

TRICOCCÆ, the 38th Linnæan natural order of plants; distiuguished by a three-cornered capsule, as the euphorbia, &c.

TRICOCCOUS, an epithet for a three-grained capsule, which is one that swells out in three protuberances, internally divided into three cells, with one seed in each.

TRICUSPIDATE, in botany, an epithet for a stamen, &c. ending in three points.

TRIDENT, an attribute of Neptune, being a kind of three-pronged sceptre which the fables of antiquity put into the hands of that deity.——*Trident*, among mathematicians, a kind of parabola, by which Des Cartes constructed equations of six dimensions.

TRIDODECAHEDRAL, in crystalography, presenting three ranges of faces, one above another, each containing twelve faces.

TRIFID, in botany, divided into three parts by lineate sinuses with straight margins.

TRIFLOROUS, in botany, bearing three flowers.

TRIFOLIATE, in botany, having three leaves.

TRIFOLIUM, in botany, trefoil or clover, of which there are forty-six species, The flowers are generally in round heads;

TRENCHES CUT IN A ZIG-ZAG FORM WERE FIRST USED BY THE FRENCH, AT THE SIEGE OF MARSEILLES, IN 1449.

EVERY STATION IS EXPOSED TO SOME TRIALS, EITHER TEMPTATIONS THAT PROVOKE OUR APPETITES, OR DISQUIET OUR PEACE.



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the Godhead, that is, three distinct substances and essences.

TRIT'ICUM, in the Linnæan system, a genus of plants, class 3 *Triandria*, order 2 *Digynia*; consisting of the wheats, which are annuals, yielding grain; and the wheat-grasses.

TRI'TONE, in music, a false concord, consisting of three tones, two major and one minor tone, or of two tones and two semi-tones.

TRI'TONS, in the Greek mythology, a kind of demi-gods, half man and half fish, upon whom the Nereids rode.——*Triton*, in entomology, a genus of animals, class *Vermes*, order *Mollusca*.

TRITOX'YDE, in chemistry, a substance oxydized in the third degree.

TRITURA'TION, in pharmacy, the act of reducing a solid body into a fine powder; called also levigation and pulverization.

TRI'UMPH, in Roman antiquity, a public and solemn honour conferred by the Romans on a victorious general, by allowing him a magnificent procession through the city. The triumph was of two kinds, the greater and the less, the latter of which was called an *ovation*. The splendid spectacle was as follows: the whole senate went out to meet the victor, who, being seated in a gilded chariot, usually drawn by white horses, and clad in his triumphal robes, was followed by the kings, princes, and generals whom he had vanquished, loaded with chains. Singers and musicians preceded, followed by choice victims, and by the spoils and emblems of the conquered cities and provinces. Lastly followed the victorious army, horse and foot, crowned with laurel, and adorned with the marks of distinction they had received, shouting *Io triumphe*, and singing songs of victory, or of sportive raillery. Upon the capitol, the general rendered public thanks to the gods for the victory, caused the victims to be slaughtered, and dedicated the crown which he wore and a part of the spoils to Jupiter. All the temples were open, and all the altars loaded with offerings and incense; games and combats were celebrated in the public places; the general gave a costly feast, and the shouts of the multitude rent the air with their rejoicings.

TRIUM'PHAL ARCH, a grand portico or archway, erected at the entrance of a town, or in some other public situation, in commemoration of some important event, or in honour of some victorious general. Among the remains of antiquity Italy can boast of the relics of several triumphal arches; and many beautiful structures of the kind have been erected in modern times.

TRIUMPHALIS CORONA. [See CROWN.]

TRIUM'VIRATE, an absolute government administered by three persons, with equal authority; as that of Augustus, Marc Antony, and Lepidus, which gave the last blow to the Roman republic; for Augustus having vanquished Lepidus and Antony, the triumvirate was soon converted into a monarchy.

TRIUM'VIRS *(triumviri)*, in Roman history, three men who jointly obtained the sovereign power in Rome.

TROCAR', in surgery, an instrument resembling a pipe, for making incisions, particularly in the operation of tapping for the dropsy.

TROCHAN'TER, in anatomy, a name given to two apophyses, situated in the upper part of the thigh-bone: they receive the tendons of most of the muscles of the thigh. The *major* process is on the outside, and the *minor* on the inside of the thigh.

TRO'CHE, a demulcent medicine, made in a cake or stiff paste, which is made by mixing the medicine with sugar and the mucilage of gum.

TRO'CHEE, in the Greek and Latin poetry, a foot consisting of two syllables, the first long, and the second short.

TRO'CHILUS, in architecture, a name used by the ancients for a hollow ring round a column, which the moderns call *scotia*.——*Trochilus*, in ornithology, the purple humming-bird, or honey-sucker, a beautiful little bird, a native of America. An aquatic bird, with long legs, has also this name.

TRO'CHITE, in natural history, a kind of figured fossil stone resembling parts of plants, called St. Cuthbert's beads. These stones are usually of a brownish colour, and break like spar.

TROCH'LEA, in anatomy, a cartilage through which the tendon of the trochleary muscle passes.——The *trochleary muscle* is the superior oblique muscle of the eye; the *trochleary nerve*, the nerve which goes to that muscle.

TROG'LODYTES, certain tribes in Ethiopia who are represented by ancient writers as living in subterranean caverns, and respecting whom we have many fabulous stories.

TROM'BONE, a musical instrument, of which there are three kinds—the bass, the tenor, and the alto. It is extremely powerful, and therefore best suited to grand choruses and other full compositions.

TROOP, in cavalry, a certain number of soldiers mounted, who form a component part of a squadron. It is the same with respect to formation, as *company* in the infantry.——The word *troops* (in the plural) signifies soldiers in general, whether more or less numerous, including infantry, cavalry, and artillery.

TROPE, in rhetoric, an expression used in a different sense from that which it properly signifies; or for the sake of presenting an idea in a lively and forcible manner.

TRO'PHY, anything taken and preserved as a memorial of victory, as arms, standards, &c. taken from an enemy. It was customary with the ancients to erect their trophies on the spot where they had gained a victory. At first they consisted of the arms they had taken; but afterwards trophies were formed of bronze, marble, or even gold.——In architecture, an ornament representing the stem of a tree, charged or encompassed with military weapons.





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and serve to support it on the cheeks of the carriage.——The *trunnion-plates* are two plates in travelling-carriages, mortars, and howitzers, which cover the upper parts of the side-pieces, and go under the trunnions.

TRUSS, in surgery, a bandage or apparatus used in cases of ruptures, to keep up the reduced parts and hinder further protrusion, and for other purposes.——In navigation, a machine to pull a lower yard close to its mast, and retain it firmly in that position.——A bundle of hay or straw, equal to 56 lbs.

TRUSTEE', in law, one to whom is confided the care of an estate, money, or business, to keep or manage for the benefit of another, either by the direction of a body of creditors or at the instance of an individual, &c., or by a legal instrument called a *deed of trust*.

TRUTH, exact accordance with that which is, has been, or shall be.——*Moral truth* consists in relating things according to the honest persuasion of our minds, and is called also veracity. Metaphysical or transcendental truth, denotes the real existence of things conformable to the ideas which we have annexed to their names.

TU'BA, a wind instrument, used by the ancient Romans, resembling our trumpet, though of a somewhat different form.

TUBE, a hollow cylinder, either of wood or metal, used for the conveyance of fluids, &c. Also, a vessel of animal bodies or plants, which conveys a fluid or other substance.——In botany, the narrow hollow part of a monopetalous corolla, by which it is fixed to the receptacle.

TU'BERCLES, in medicine, little tumours which suppurate and discharge pus.——In botany, little knobs or rough points on the leaves of certain plants. Hence the epithet *tuberculate*.

TU'BEROSE (*Polianthus tuberosa*), an odoriferous plant of the liliaceous kind, formerly called the tuberous hyacinth. The flowers are disposed in a simple elongated spike; they are large, sessile, alternate, tubular, and of a very pure white: the tube of the corolla is a little curved, and divides into six oval obtuse lobes. The essential oil is a grateful perfume. Several remarkable varieties are known.

TU'BEROUS, in botany, consisting of roundish fleshy bodies, or tubers; as the roots of artichokes and potatoes.

TU'BIPORES, in natural history, a genus of zoophytes, formed of upright parallel tubes, containing coral insects.

TU'BULAR, having the form of a tube or pipe.

TUBULA'RES, in natural history, a genus of zoophytes, formed of branching tubes, containing coral animals.

TU'BULOUS, in botany, having a bell-shaped border, with five reflex segments, rising from a tube; as, a *tubulous* floret.

TU'ESDAY, the third day of the week, answering to the *dies Martis* of the Romans, but dedicated by the Saxons to *Tuisco*. The peculiar attribute of the deity worshipped under this name is not clearly known.

TU'FA, in mineralogy, porous volcanic stones, containing much earthy matter. They are formed either by the concretion of loose volcanic dust or cinders, cemented by water, or by the consolidation of mud thrown out of volcanoes.——*Tufaceous*, pertaining to *tufa*.

TUILERIES, the residence of the French monarchs, on the right bank of the Seine, in Paris. It was begun by Catharine de Medici, wife of Henry II. in 1564, and the latest additions made to it were by Napoleon, in 1808. The exterior of the Tuileries is deficient in harmony, having been built at different times, and on very different plans, but the interior is magnificent.

TU'LIP (*tulipa*), in botany, a plant and flower belonging to the genus *Liliacea*, of a great variety of colours, and much cultivated for its beauty. The tulip has always been a favourite plant with the Belgians and Dutch; and, about a century after its introduction, the mania prevailed to such an extent in those countries that more than two thousand dollars were often given for a single root. It is still extensively cultivated in Holland.

TU'LIP-TREE, an American tree of the genus *Lyriodendron*. Its luxuriant growth, as well as the beauty and singularity of its foliage and flowers, entitle it to rank among the most magnificent plants which grace the forests of America. The flowers are large and showy, (variegated with different colours, among which yellow predominates) and somewhat resemble those of the tulip. In some parts of the United States, it constitutes, alone, very considerable tracts of the forest, and has been found 140 feet high, with a stem 20 feet in circumference. The heart of the wood is of a light yellow colour, and the sap white: the grain is fine and compact; it is easily wrought, polishes well, and is sufficiently strong for purposes requiring great solidity. The timber, in short, uniting strength with lightness and durability, is applicable to almost all purposes, and is very extensively used.

TU'MOUR, in medicine, the morbid enlargement of a particular part, without being caused by inflammation.

TU'MULUS, a barrow or mound of earth in ancient times raised to the memory of the dead. Barrows of loose stones or of dark mould and flints are very common in England; and urns containing the ashes of those who have here been buried, with spears, swords, shields, bracelets, beads, &c. are among the principal contents. We find, indeed, that these rude funeral monuments are met with in most countries.

TUN, a measure of capacity for liquids. The English tun contains two pipes, or four hogsheads, or 252 gallons.

TU'NIC (*tunica*), a garment worn within doors by the Romans of both sexes, under the toga; the slaves and common people only appearing in it abroad. The senators wore a tunic with a broad stripe (*clavus*) of purple sewed on the breast: the equites

"TULIPOMANIA" WAS THE NAME GIVEN TO A SPECIES OF GAMBLING TRAFFIC IN TULIP-ROOTS, IN HOLLAND, IN THE 17TH CENTURY.

THE TULIP DERIVES ITS NAME FROM ITS RESEMBLANCE TO THE EASTERN HEAD-DRESS CALLED TULIPAN, OR TURBAN.



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IN TURNING, THE VELOCITY OF ROTATION MAY BE EXTREMELY SWIFT IN WOOD, SLOWER IN BRASS, AND SLOWEST OF ALL IN STEEL.

greatest facility into vessels of every description. But in most operations of the art the revolving body is cut or shaved by applying a chisel, or other suitable tool, to its surface, while in motion; which requires firmness in the action, or axis of rotation, and also that the tool itself should be steadily supported. The instrument, or apparatus for these purposes, is called a *lathe*. The art of turning is most extensively applicable in all the mechanic arts; for the hardest metals and the most ponderous artillery, as well as the softest wood and the most delicate pivots in a watch, can be fashioned by the turning-lathe.

TUR'NIP, in botany, a bulbous plant, the *Brassica rapa*, extensively cultivated for its esculent root. Turnips are a wholesome article of food, much in use. The large rooted varieties have been employed for fodder, during the winter season, from time immemorial. The *ruta baga*, or Swedish turnip, has a large root, and is of a yellowish hue.

TURN'PIKES, the name given to the toll gates on the public roads, the ancient gate being a mere pole or pike. The turnpike roads are formed under acts of parliament, and managed by commissioners, trustees, and surveyors. [See ROADS.]

TURN'SOLE, in botany, a plant of the genus *Heliotropium;* so named because its flower is supposed to turn towards the sun.

TUR'PENTINE, a transparent resinous substance procured from different species of the pine and fir. The best sort comes from North America. The method of obtaining it is by making a series of incisions in the bark of the tree, from which the turpentine exudes, and falls down into receptacles prepared to receive it. English turpentine is from the Scotch fir; Venice turpentine, which is more thin and aromatic, is derived from the *pinus larix;* and the common American turpentine comes from the *pinus palustris*. To obtain the *oil of turpentine*, the juice is distilled in an apparatus like a common still.

TUR'PENTINE TREE, in botany, a tree of the genus *Pistacia*, which produces not only its proper fruit, but a kind of horn or excrescence, made by the puncture of an insect, which appears on the surface of its leaves.

TUR'QUOISE, or TURK'OIS, a mineral of a beautiful sky-blue colour, occurring in thin layers, or in rounded masses. It is destitute of lustre, but susceptible of a high polish, and is much used in jewellery. It contrasts well with diamonds and pearls set in gold. Some naturalists say that the turquoise is a bone impregnated with cupreous particles, and not a real stone.

TUR'TLE. [See TORTOISE.]

TURTLE-DOVE, in ornithology, a bird of the genus *Columba;* a wild species, whose note is plaintive and tender. [See PIGEON.]

TUR'TLE-SHELL, in conchology, a beautiful species of *Murex;* also, a tortoise-shell.

TUS'CAN ORDER, one of the orders of architecture, the most ancient, the most massive, and most simple.

TUS'SIS, in medicine, a cough.

TUSSILA'GO, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. The species include common colt's-foot, white-colt's-foot, &c.

TUTENAG, a metallic compound brought from China, called Chinese copper or white copper. It consists of copper, zinc, and iron.

TUTTO, or TUTTI, in Italian music, a direction for all to play in full concert.

TUTTY, in mineralogy, an argillaceous ore of zinc, found in Persia, formed on cylindric moulds into tubular pieces, like the bark of a tree. *Tuttyis* also formed by fusing brass or copper, mixed with blende, when it is incrusted in the chimneys of the furnace.

TWAITE, in archæology, wood grubbed up and turned into arable land.

TWELFHI'NDI, among the Anglo-Saxons, men of the highest rank, who were assessed at 1200 shillings; and if any injury were done to such persons, satisfaction was to be made according to their worth.

TWI'LIGHT, the faint light diffused through the atmosphere by the sun, some time before rising, and after setting; arising from the reflection of the sun's rays from the aqueous vapours and atmosphere overhead, which produce this effect in our climate to the height of 44 miles. The morning twilight begins, and the evening twilight ends, when the sun is about eighteen degrees below the horizon. At the poles, where there are six months day and six months night, the twilight continues about two months, so that a great part of the half year's night is illuminated.

TYM'PAN, a part of a printing-press, consisting of a frame covered with parchment, on which the blank sheets are put in order to be laid on the form to be impressed. ——*Tympan*, in architecture, that part of the bottom of the pediments which is enclosed between the cornices. In carpentry, it is applied to the pannels of doors in the same sense.

TYMPANI'TES, or TYMPANY, in medicine, a flatulent distension of the belly.

TYM'PANUM, in anatomy, the drum or barrel of the ear.——In architecture, the flat surface or space within a pediment. ——In mechanics, a wheel placed round an axis.——Among the Greeks and Romans, a *tympanum* was a musical instrument, not unlike the tambourine, beaten with the hand.

TYPE, in theology, a sign or symbol; a figure of something to come; as, the paschal lamb was a *type* of Christ. To the word in this sense is opposed *antitype;* Christ, therefore, is the *antitype*.——In natural history, by *type* is meant a general form, such as is common to the species of a genus, or the individual of a species.

TYPE-FOUNDING, the art and practice of manufacturing metal letters used by printers. The type, or pattern of the letter, is first cut on a steel punch, and

THE TURTLE-DOVE IS CELEBRATED FOR ITS CONJUGAL ATTACHMENT, AND IS FOUND IN ALL THE TEMPERATE PARTS OF THE EUROPEAN CONTINENT.



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are seated at Oxford, Cambridge, St. Andrew's, Glasgow, Aberdeen, and Edinburgh. They are governed by chancellors, vice-chancellors, proctors, and beadles; and every college has its master and tutors; there are also public lectures of professors in every established branch of knowledge. The students and all the members wear an ancient costume, consisting of trencher-caps and gowns, varied according to their degrees, which are bachelors of arts, divinity, law, music, medicine; masters of arts, and doctors of divinity, law, and physic. The London University and King's College, are two collegiate establishments in the metropolis, of recent foundation, which may probably be the precursors of others. Universities in their present form, and with their present privileges, are institutions comparatively modern. They sprang from the convents of regular clergy, or from the chapters of cathedrals in the church of Rome, where young men were educated for holy orders, in that dark period when the clergy possessed all the little erudition which was left in Europe. Probably in every town in Europe where there is now a university, which has any claim to be called ancient, these convents were seminaries of learning from their first institution; for it was not till the more eminent of the laity began to see the importance of literature and science, that universities distinct from convents were founded, with the privilege of admitting to degrees, which conferred some rank in civil society. These universities have long been considered as lay corporations; but as a proof that they had this kind of ecclesiastical origin, it will be sufficient to observe, that the pope arrogated to himself the right of vesting them with all their privileges; and that, prior to the Reformation, every university in Europe conferred its degrees in all the faculties by authority derived from a papal bull. The most ancient universities in Europe are those of Oxford, Cambridge, Paris, Salamanca, and Bologna; and in the two English universities, the first-founded colleges are those of University, Baliol, and Merton, in the former, and St. Peter's in the latter. Oxford and Cambridge, however, were universities, or, as they were then called, studies, some hundreds of years before colleges or schools were built in them; for the former flourished as a seminary of learning in the reign of Alfred the Great, and the other, if we may credit its partial historians, at a period still earlier. The universities of Scotland are four, St. Andrew's, Glasgow, Aberdeen, and Edinburgh. In Ireland there is but one university, viz. that of Dublin, founded by queen Elizabeth, and very richly endowed.—We shall now proceed to explain the various component parts of an university; in doing which we will first speak of Cambridge; and conclude with an account of the course of instruction pursued at Oxford. Every college is in itself a corporate body, and governed by its own statutes, which must, however, concur with the general laws of the university, formed by Elizabeth on previous privileges, and confirmed by parliament, consequently they are the basis of all modern regulations. Each of the colleges sends deputies both for the executive and legislative branches of the government, and the place of their meeting is termed the senate-house. Masters of arts, doctors in divinity, civil law, and physic, who have their names inscribed on the college boards, and are resident at Cambridge, possess votes in the above assembly. The senate consists of two classes, which are called regents or non-regents, with a view to some particular offices assigned by the statutes of the university to the junior division. Masters of arts of less than five years' standing, and doctors under two, form the regent, or upper-house; and it has besides the term of white-hood house, from the circumstance of the members having their hoods lined with silk of the above colour: the remainder constitute the non-regent, or black-hood house: doctors of more than two years' standing, and the public orator of the university, are entitled to vote in either of those houses at pleasure; exclusive of which there is a caput, or council, composed of the vice-chancellor, a doctor of each faculty, and two masters of arts, who are representatives of the houses already mentioned. The vice-chancellor being a member of the caput by virtue of his office, his election to the former only takes place annually, on the 4th of November, when the senate choose him from the masters of the sixteen colleges; but that of the caput occurs after the same interval, on the 12th of October, in the following manner: the vice-chancellor and the two proctors severally nominate five persons, and from the fifteen thus proposed, the heads of colleges and doctors select five, generally preferring the vice-chancellor's list. This officer calls the meetings of the senate by a printed notice, which specifies the cause, and must be suspended in the halls of the several colleges three days previously to the time appointed. A congregation of the members thus summoned may proceed to business, and a congregation consists of any number above twenty-six, including the proper officers of the senate, who are compelled to attend on oath personally, or by their legal deputies. Exclusive of these casual meetings, there are statutable congregations, for conferring degrees, electing officers, &c. &c. which are held without notice. A degree cannot be conferred without passing a grace for the purpose; nor are they ever conferred, unless the persons receiving them previously sign a declaration, that they are *bond fide* members of the church of England as by law established. All the officers of the university, forming the executive part of it, are chosen by the senate, the principal of whom is the chancellor, who presides in all cases, and to whom is confided the sole power of governing, except in cases of mayhem and felony; he is besides expected to protect and preserve all the rights and privileges of the institu-



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in the different arts and sciences were established; but these university officers are no longer the main sources of instruction. The demand for instruction created by the degree examination, is met almost exclusively by lectures delivered in the several colleges and halls, or, rather, by private tutors in the colleges and halls; so exclusively indeed, that, although some knowledge of Greek is essential for a degree, and a considerable proficiency for the higher class degrees, the Greek professor has no lectures. What is actually required for a degree of bachelor of arts is, that the student should display some acquaintance with the facts and doctrines of the Christian religion, and especially with the peculiar tenets of the church of England, as set forth in its articles; some proficiency in the Greek and Latin languages, in one or more of the ancient philosophical treatises, or, in lieu of this, in a portion of ancient history; some knowledge, also, either of the elements of logic or of the elements of geometry. The statute, however, contemplates the probability of a much higher standard of qualification in a portion of the students; and for these it provides honours additional to that of a mere degree. Their names are printed, arranged in four classes, according to a fixed standard of merit for each class. The candidate is permitted to name the book in which he wishes to be examined; and the examiners are, besides, at liberty to examine in any books which they may select. The mathematical examinations are conducted principally by means of printed questions, answered in writing. A candidate for the first class may be stated generally to have acquired a knowledge of, 1. the elements of analytical geometry and trigonometry; 2. the differential and integral calculus and its applications; 3. mechanics, including the principles of its application to the solar system, embracing the substance of the three first sections of Newton's *Principia*, which are also read in the original forms; 4. the principle of hydrostatics, optics, and plane astronomy. The examinations take place twice a year. Prizes are given for the encouragement of compositions in prose and verse, in Latin and English. There are also public scholarships, which operate as rewards and encouragements of general proficiency or particular acquirements. These include classical literature, mathematics, Hebrew, and the law. The university also affords facilities for the acquirement of various branches which do not enter into the qualification for a degree. Thus the several professors of geology, chemistry, and many other branches of science, are always provided with classes, often with numerous ones. We now proceed to the college preparation for the public examinations. It is this that really constitutes the Oxford education. The process of instruction in the college is by no means of recitations. Every head of a house appoints a certain number of tutors for this purpose. Questions are put by the tutor, and remarks made by him on the book which is the subject of study. He also gives directions respecting the proper mode of studying. The students usually attend two, three, or four tutors, who thus give instruction in different branches. The college tutor, moreover, has interviews, from time to time, with his pupils, separately, for the sake of ascertaining the individual's state of preparation for the public examination, assisting him in his difficulties, &c. Besides these college tutors, however, there are private tutors, who superintend the studies of individuals, and prepare them for attendance on the exercises of the college tutors. These private tutors are particularly useful to that large class of students who come to college insufficiently prepared. The course of college instruction closes, at the end of each term, with a formal examination of each member separately, by the head and tutors, who attend for this purpose. This summing up of the business of the term is called, in the technical language of the place, *collections*, or *terminals*. Each student presents himself in turn, with the books in which he has received instruction during the term, and, in many colleges, with the essays and other exercises which he has written, his analyses of scientific works, abridgments of histories, and the like. In some colleges the students are required to present, for their examination, some book also, in which they have not received instruction during the term. Besides the other studies pursued in the colleges, the students write weekly short essays on a given subject, occasionally interchanged with a copy of Latin verses, for those skilled in versification. The liberality of donors has enabled the colleges to provide indirectly for the promotion of study by means of exhibitions, scholarships, and fellowships. Every college and hall examines, if it thinks fit, its own candidates for admission, and pronounces, each according to a standard of its own, on their fitness or unfitness for the university.—Such is the general outline of an English university, a constitution the work of ages, with numerous perfections, and with very few errors, whatever prejudice may advance to the contrary. Superficial knowledge is held in no kind of estimation at either of our great seminaries; the very essence and causes, as well as effects, must be explored to satisfy the expectations of the various professors, formed by long experience and unexhausted assiduity; and we accordingly find, that from these pure fountains of academic lore the most profound linguists, the most able theologians, mathematicians of exemplary skill and assiduity, philosophers, poets, historians, logicians, and men of science, in the most comprehensive signification of the word, are continually springing. To these classic haunts every member of the community owes a debt of gratitude. To the system of instruction there pursued, and to the collegiate discipline—in spite of all the vulgar clamour





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THE NOBLEST COURSE OF LIFE IS THE MOST TRULY USEFUL.



U'SANCE, in commerce, the time fixed for the payment of bills of exchange, reckoned either from the day on which the bill is accepted, or from that of its date, varying in different countries, and thus called, because wholly dependent on *usage*.

U'SH'ER, literally a "door-keeper;" being derived from the French "huissier." In Britain, *usher* is the name given to several public officers, in which sense it seems to be synonymous with sergeant. These ushers are in waiting, introduce strangers, and execute orders. Usher is also used as the denomination of an assistant to a school-master; where it seems to refer to his office of introducing the scholars to learning.

USTULA'TION, in pharmacy, the roasting or torrefying of moist substances over a gentle fire, so as to prepare them for pulverization. In metallurgy, *ustulation* is the operation of expelling one substance from another by heat.

USUCAP'TION, in the civil law, the acquisition of the title or right to property by the undisputed possession and enjoyment of it for a certain term prescribed by law.

U'SUFRUCT, in the civil law, the temporary use or enjoyment of lands or tenements; or the right of receiving the fruits and profits of an inheritance, without a power of alienating the property.

U'SURY, a compensation or reward for money lent. In this sense it is merely equivalent to *interest*. In the common business of life, however, it rarely has this signification; but is chiefly used in an odious sense, to express an exorbitant or illegal compensation for money lent, in contradistinction to legal interest.

UTILITA'RIANS, a name given to the school of certain modern philosophers, who, following the dogmas of Jeremy Bentham, test the value of all institutions and pursuits by the principle of utility, that is, the promotion of the greatest happiness of the greatest number.

UTRICULA'RIA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. Plants of this genus, called in English *bladderwort*, have tuberous roots like the potato.

UVA'RIA, in botany, a genus of plants, class 13 *Polyandria*, order 7 *Polygamia*. Plants of this genus are climbing shrubs or trees, and natives of India.

U'VULA, in anatomy, a soft, round, spungy body suspended from the palate, near the foramina of the nostrils, over the glottis. Its principal use is to break the force of the cold air, and prevent its entering too precipitately into the lungs.

UVULA'RIA, in botany, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*.

U'VULA-SPOON, in surgery, an instrument to be held just under the uvula for the purpose of conveying any substance into the cavity behind.

# V.

V, the twenty-second letter of the alphabet, is a labial articulation, nearly allied to *f*, being formed by the same organs; but *v* is vocal, and *f* is aspirate, and this constitutes the principal difference between them. V has one sound only, as in *vain, very, vote, vanity*. Though *v* and *u* have as distinct uses as any two letters in the alphabet, they were formerly considered as one letter; and in some encyclopædias and dictionaries the absurd practice of arranging the words which begin with these letters is still continued. As a numeral, V stands for 5; and with a dash over it, in old books, for 5000.

VA, in music, Italian for "go on," as *va crescendo*, go on increasing.

VACA'TION, in law, the period between the end of one term and the beginning of another: and the same in the universities. It also denotes the time when a see or other spiritual dignity is vacant; as, "during the *vacation* of a bishopric, the dean and chapter are guardians of the spiritualities."

VACCINA'TION, in medicine, inoculation with the cow-pox, intended as a preservative against infection from the small-pox. [See Cow-Pox.]

VACCIN'IUM, in botany, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species are shrubs, or trees, as the bilberry, cranberry, &c.

VAC'UUM, in physics, a space devoid of all matter, as was generally conceived by the ancients to exist. The question whether there is such a thing as an absolute *vacuum* in nature, or not, has given rise to disputes among philosophers in all ages. ——The *Torricellian vacuum* is produced by filling a tube with mercury, and allowing it to descend till it is counterbalanced by the weight of the atmosphere, as in the barometer invented by Torricelli.

VA'DE-MECUM (from the Latin, signifying *Go with me*), a favourite book or other thing that a person constantly carries with him.

VA'GINATED, in botany, sheathed; invested by the tubular base of the leaf, as a stem.

VAGINOPEN'NOUS, having the wings covered with a hard case or sheath, as insects.



THE VACCINE INOCULATION WAS INTRODUCED IN 1796, BY DR. JENNER, WHO RECEIVED FROM PARLIAMENT 10,000L. FOR THE DISCOVERY.

THERE IS SOMETHING BEYOND MERE UTILITY NECESSARY EVEN IN THIS LIFE, OR THE INTELLECTUAL CHARACTER IS NOT VERY EXALTED.

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discovered metal, first found in a lead mine at Zimapan, in Mexico, but subsequently (1830) discovered in Swediah iron, remarkable for its ductility, at Jaberg, in Sweden. *Vanadium* is white, and, when its surface is polished, it resembles silver considerably. It is easily reduced to a powder of an iron-gray colour, and is a good conductor of electricity. From it is obtained *vanadic acid*, and various salts of a fine azure blue colour when in solution.

VAN'DALS, a ferocious race, who, it is believed, were either a Sclavonic tribe, or came from the north of Germany, between the Elbe and the Viatula. During the 4th and 5th centuries they became very powerful, and, under Genseric, their king, overran Spain, Gaul, and Italy. They subsequently established themselves in Africa; but were eventually subdued by Belisarius, the celebrated Roman general in the reign of Justinian, who took their king, Gelimer, prisoner, and carried him to Constantinople in triumph.—From the ferocity of their character, and the havoc they made of the finest works of art, the words *Vandalism* and *Vandalic* have been applied to such acts as imply a rude and savage ferocity combined with a disregard of the advantages of civilization.

VANE, or WEATH'ERCOCK, a light body (generally a thin plate) placed on a spindle at the top of a church steeple, or other building, which turns with the wind and points to the part from which it blows. ——In ships, a piece of bunting used for the same purpose.

VA'POUR, in physics, an assemblage of vesicles, or little bubles of water, filled with air, which, being raised by the action of heat, float in the atmosphere, and form what we call clouds. Dr. Halley attempted to estimate the vapour drawn from the Mediterranean during one sunny day; and, by calculating the surface of that sea, and making an experiment on a small quantity of water, he was led to suppose, that it might be at least 5280 millions of tuns. Dry winds, also, carry off even a larger proportion. It is by vapour redescending to the surface of the earth, in various forms, that all the phenomena of dew, rain, hail, and snow are produced. If the cold wind, or other cause, happen to act early enough to precipitate the vesicles, before they arrive at any considerable height, the drops, which in so short a descent do not unite to any considerable degree, are small; and thus is formed what we call *dew*; now, this precipitation regularly happening with respect to that vapour which rises late on a summer's day, a fall of dew is the natural consequence. If the vapour is more copious, and the height to which it rises somewhat greater, than that supposed above, mist or fog is produced; if higher still, a *small rain*. If no cause of condensation occur, it accumulates into heavy clouds.

VA'POUR BATH, a machine for producing a profuse perspiration by means of exposing the body to the steam of hot water, which is usually promoted by friction. The general effect of this process is to relax the body, remove obstructions of the skin, alleviate pain and spasmodic contractions, and promote sleep. In the vapour bath, the stimulant power of heat is modified and tempered by the moisture diffused through the air; and it is generally acknowledged to be not only more safe, but more effectual than the hot water bath.

VA'RI, in zoology, a species of quadruped, the maucauco, or *Lemur catta* of Linnæus, having its tail marked with rings of black and white. It is a native of Madagascar.

VA'RIABLE QUAN'TITIES, in geometry and analytics, such as are either continually increasing or diminishing; in opposition to those which are constant and unchangeable.

VARIATION, in geography and navigation, a deviation of the magnetical needle from the true north point; called also *declination*. The causes of this variation are among inscrutable phenomena; but it is supposed to arise from some connexion between the obliquity of the ecliptic, and the causes of polarity, which are connected with the earth's motion, and a subordinate electrical action.——*Variation*, in music, the different manner of playing or singing the same air or tune, by subdividing the notes into several others of less value, or by adding graces, &c., yet so that the tune itself may be discovered through all its embellishments.——In grammar, change of termination of nouns and adjectives, constituting what is called case, number, and gender.——*Variation of the moon*, the third inequality observed in the moon's motion, by which, when out of her quadratures, her true place differs from her place twice equated.

VARICEL'LA, in medicine, the chickenpox, a genus of diseases, class *Pyrexiæ*, order *Exanthemata* in Cullen's Nosology.

VARI'ETY, in natural history, any individual plant or animal that differs from the rest of the species in some accidental circumstances.

VARI'OLA, or SMALL-POX, in medicine, a genus of disease in the class *Pyrexiæ*, and order *Exanthemata*, of Cullen. It is a disease of a very contagious nature, supposed to have been introduced into Europe from Arabia, and in which there arises a fever, that is succeeded by a number of little inflammations in the skin, which proceed to suppuration, the matter formed thereby being capable of producing the disorder in another person. It makes its attack on people of all ages, but the young of both sexes are more liable to it than those who are much advanced in life. This destructive scourge of the human race has, of late years, been happily arrested by the discovery of the *variola vaccina*, or cow-pox. [See Cow-Pox.]

VA'RIOLITE, in mineralogy, a kind of porphyritic rock, in which the imbedded substances are imperfectly crystalized, or



IN 455 THE VANDALS PLUNDERED ROME DURING FOURTEEN DAYS, AND TOOK POSSESSION OF ALL THE TREASURES AND WORKS OF ART.

THE CORSAIRS OF THE VANDALS WERE MASTERS OF THE WHOLE OF THE MEDITERRANEAN, AND SPREAD TERROR ON THE COASTS OF ITALY.

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of which are comparatively fixed in the fire, and therefore impart a permanent stain to paper; while the latter, owing to their volatility, produce a stain which disappears by gentle heat.

VE'GETABLE MAR'ROW, the fruit of a plant of the gourd kind, originally growing in Persia, and now cultivated in this and other northern countries. Its flesh is very tender, soft, and of a buttery quality.

VE"GETO-AN'IMAL MATTER, a term formerly applied to vegetable gluten, which is found in the seeds of certain plants, in a state of union with farina or starch. It is remarkably elastic, and when dry, semi-transparent. By distillation it affords, like animal substances, alkaline water, concrete volatile alkali, and an empyreumatic oil.

VEIN, in anatomy, a vessel which receives the blood brought by the arteries, and carries it back to the heart. Veins are continuations of the extreme capillary parts of the arteries, reflected back again toward the heart. Uniting their channels, as they approach the heart, all the veins ultimately form three trunks: the *vena cava descendens*, which brings the blood from all the parts above the heart; the *vena cava ascendens*, which brings the blood from all the parts below the heart; and the *porta*, which carries the blood to the liver.——In botany, the *veins* of plants are an assemblage of tubes, through which the sap is transmitted along the leaves. The term is more properly applied to the finer and more complex ramifications, which interbranch with each other like net-work; the larger and more direct assemblages of vessels being called *ribs* and *nerves*.——*Vein*, among miners, a space containing ores, spar, clay, &c.; when it bears ore, it is called a *quick vein*, when it does not, a *dead vein*. Metalliferous veins have been traced in the earth for miles; and many species of stones are also often found in *veins*.

VELITES, in antiquity, light armed troops in the Roman armies, who derived their name, *a velocitate*, from their swiftness. They seem not to have been divided into distinct bodies or companies, but to have hovered loosely in front of the army. They were disposed sometimes before the front of the *hastati*, sometimes dispersed up and down among the void spaces, and sometimes placed in two bodies in the wings. The *Velites* generally began the combat, skirmishing in flying parties with the first troops of the enemy, and, when repulsed, fell back by the flanks of the army, or rallied again in the rear. Their armour was a javelin, casque, cuirass, and shield, all of a light construction.

VEL'LUM, a fine kind of parchment made of calves' skin, rendered particularly clear and white. The invention of vellum has been usually, though erroneously, ascribed to Attalus, king of Pergamus, now Bergamo; but the art of writing upon skins was known long before the time of Attalus, and is assignable to Eumenes, king of Pergamus, the contemporary with Ptolemy Philadelphus, whose motive for giving his attention to the improvement of vellum is said to be as follows:—The Egyptian monarch was anxiously employed in perfecting his magnificent library at Alexandria: with these feelings and views, he prohibited the exportation of the papyrus from his dominions, that he might not be subjected to the inconvenience of wanting paper for the multitude of scribes, whom he constantly employed to copy the MSS. which he had, by means of skilful emissaries, collected in every part of the known world.

VELO"CIPEDE, a vehicle consisting of a piece of wood about five feet long, and half a foot wide, resting on two wheels, one behind the other. On this an individual sits, as on horseback, so that his feet touch the ground, while he propels the machine by pressing his feet slightly against the ground, and keeps his balance in the same way. The latter is the principal difficulty of beginners. In front of the saddle is a rest for the arms; and the front wheel may be turned at pleasure, so as to enable the rider to give any direction to the machine.

VELO"CITY, an extraordinary degree of swiftness. We apply the words *celerity* and *rapidity* to the swiftness of animals, but in speaking of the progress of bodies moving in ethereal space we use the word *velocity*; as, the velocity of a planet in its orbit, the velocity of a cannon-ball, the velocity of wind, or the velocity of light. Velocity is *absolute* or *relative*; absolute when a body moves over a certain space in a certain time; relative when it has respect to another moving body.

VE'NA CA'VA, in anatomy, the largest vein in the body, so called from its great cavity, into which, as a common channel, all the lesser veins, except the pulmonaries, empty themselves. This vein receives the blood from the liver and other parts, and carries it to the heart.

VE'NA PORTA, in anatomy, the great vein situated at the entrance of the liver, which is distinguished into two portions, the hepatic and abdominal.

VENEER'ING, the art of inlaying furniture, &c. with different kinds of wood, metal, or other materials. Also, of making representations of flowers, birds, and other figures.

VENTIDUCT, in building, a passage for wind or air; a subterraneous passage or spiracle for ventilating apartments.

VENTIL'ATION, the act of expelling impure air, and of dissipating noxious vapours. Few persons are aware how very necessary a thorough ventilation is to the preservation of health. We preserve life without food for a considerable time; but keep us without air for a very few minutes, and we cease to exist. It is not, however, enough that we have air; we must have *fresh* air; for the principle by which life is supported is taken from the air during the act of breathing. One-fourth only of the atmosphere is capable of supporting life; the remainder serves to dilute the pure vital air, and render it more fit to be respired. By the care we take to shut out the external air



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A CONSISTENT THEORY OF TIME REDUCES ALL THE SORTS OF VERSE TO ONE FUNDAMENTAL FORM, OF WHICH THERE ARE MANY MODIFICATIONS.

VER'MIFORMIS, in anatomy, a term applied to various parts in the human body, bearing some resemblance to worms; as, the *vermiform* process of the cerebellum. ——*Vermiformes musculi*, four muscles in each hand and foot, which bring the fingers and toes towards the thumbs and great toes, called also *lumbricales*.

VER'MIFUGE, an anthelmintic medicine, or a substance that destroys or expels worms from animal bodies.

VERMIL'LION, a red pigment, of a hue between scarlet and crimson. There are two kinds of vermillion; the one natural or native, and the other artificial or factitious. Native vermillion is found in several silver-mines, in the form of a ruddy sand, which only requires to be purified. Factitious or common vermillion is made of the red sulphuret of mercury, or, as it was formerly called, factitious cinnabar, reduced to a very fine powder.

VER'NAL, appearing in or appertaining to the spring: as, *vernal* flowers are preparatives to autumnal fruits.——*Vernal signs*, in astronomy, the signs in which the sun appears in the spring.——*Vernal equinox*, the equinox in March; opposed to the *autumnal* equinox, in September. [See EQUINOX.]

VERNA'TION, in botany, the disposition of the nascent leaves within the bud. It is also called *foliation*.

VERBE'NA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. This genus of plants, well known in English by the name of *vervain*, consists of shrubs or annuals.

VERBESI'NA, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. These consist entirely of shrubs.

VERONI'CA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. The species are mostly perennials, consisting principally of the different kinds of the plant Speedwell.

VERSE, in poetry, a line or part of a composition, the cadences of which are similar in each. The harmony of every verse is complete in itself. Verses are made up of feet, the number and species of which constitute the character of the verse, as *hexameter*, *pentameter*, &c. In the Greek and Roman versification, a foot was determined by its quantity; in the English, quantity is supplied by accent.——*Blank-verse*, poetry in which the lines do not end in rhymes. ——*Heroic-verse* usually consists of ten syllables, or in English, of five accented syllables, constituting five feet.——*Versification* is the art of adjusting the syllables, and forming them into harmonious measure. [See POETRY.]

VER'SATILE, an epithet for that quality which enables persons to turn readily from one thing to another.——In botany, a *versatile anther* is one fixed by the middle on the point of the filament, and so poised as to turn like the needle of a compass.

VERST, a Russian measure of length, containing 3500 feet; about three quarters of an English mile.

VERT, in law, everything in a forest that bears a green leaf which may serve as a cover for deer. To preserve *vert* and venison is the duty of the forest officer called the *verderer*.——In heraldry, the colour of green on coats of arms, represented in engraving by lines drawn from the dexter chief to the sinister base.

VER'TEBRÆ, in anatomy, the twenty-four bones of which the spine consists, and on which the several motions of the trunk of our bodies are performed. The spine may be considered as being composed of two irregular pyramids, which are united to each other in that part of the loins where the last of the lumbar vertebræ is united to the *os sacrum*. The vertebræ which form the upper and longest pyramid, are called true vertebræ; and those which compose the lower pyramid, or the *os sacrum* and *coccyx*, are termed false vertebræ. In each of the vertebræ, as in other bones, we may remark the body of the bone, its processes and cavities. The body may be compared to part of a cylinder cut off transversely; convex before and concave behind, where it makes part of the cavity of the spine. There is in every vertebra, between its body and apophyses, a foramen, large enough to admit a finger. These foramina correspond with each other through all the vertebræ, and form a long bony conduit for the lodgment of the spinal marrow.——*Vertebrates*, a pair of muscles which serve to move the vertebræ of the back.——*Vertebral animals* are red-blooded, with brains and a spinal chord; other kinds, or invertebral, have white blood, no skull, and no back-bone.

VER'TEX, in geometry, the top of any line or figure; as, the vertex of a triangle. ——In anatomy, the crown of the head. ——In astronomy, the zenith, or point of the heavens immediately over the head.

VER'TICAL, pertaining to the vertex or zenith. The sun is vertical to the inhabitants within the tropics at certain times every year. A star is said to be vertical when it is in the zenith.——*Vertical circle*, in astronomy, a great circle of the sphere passing through the zenith and nadir, and cutting the horizon at right angles. *Vertical point*, is that point in the heavens which is over our heads, otherwise called the zenith.——*Vertical plane*, in perspective, is a plane perpendicular to the geometrical plane, passing through the eye, and cutting the perspective plane at right angles.—— *Vertical plane*, in conics, is a plane passing through the vertex of the cone, and parallel to any conic section.——*Vertical line*, in conics, is a right line drawn on the vertical plane, and passing through the vertex of the cone.——*Vertical dial*, is a sun-dial drawn on the plane of a vertical circle, or perpendicular to the horizon.——*Vertical leaves*, in botany, are such as stand so erect, that neither of the surfaces can be called the upper or under.——*Vertical anthers*, are such as terminate the filaments, and being inserted by their base, stand no less upright than the filaments themselves.

IN ADVANCED AGE, THE CARTILAGES BECOME SKINFLINT, AND CONSEQUENTLY LOSE, IN A GREAT MEASURE, THEIR ELASTICITY.



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THERE IS NO GOOD REMEDY FOR SOUR WINES; THEIR ACIDITY MAY BE CORRECTED, BUT THEIR ORIGINAL QUALITIES CANNOT BE RESTORED.

lation of any body, by which sound is produced. The acuteness, elevation and gravity of sound, depend on the length of the chord and its tension.

VIC'AR, a particular kind of parish priest, where the predial tithes are impropriated or appropriated, that is, belong to a chapter or religious house, or to a layman, who receives them, and only allows the vicar the smaller tithes as a salary.—— *Vicars apostolical*, in the Romish church, are those who perform the functions of the pope in churches or provinces committed to their direction.——The title of *vicar-general* was given by Henry VIII. to the earl of Essex, with power to oversee all the clergy, and regulate all church affairs. It is now the title of an office, which, as well as that of official principal, is united in the chancellor of the diocese. The business of the vicar-general is to exercise jurisdiction over matters purely spiritual.

VICE (Lat. *vice*, in the turn or place), is used in composition to denote one *qui vicem gerit*, who acts in the place of another, or is second in authority. Thus we have such words as *vice-chamberlain*, *vice-chancellor*, *vice-resident*, *vicegerent*, *viceroy*, &c.—— *Vice*, in smithery, an instrument used for holding fast any piece of iron which the artificer is working upon.——Among glaziers, a machine for drawing lead into flat rods for case windows.

VI ET ARMIS, in law, words made use of in indictments and actions of trespass, to show the violent commission of any trespass or crime.

VI'GIL, in church affairs, the evening before any feast, the ecclesiastical day beginning at six o'clock in the evening, and continuing till the same hour the following evening. The word is derived from the *vigiliæ*, which denoted the night watches and guards among the Roman soldiers, in contradistinction to the *excubia*, who kept guard by day. The word was hence adopted by the first Christians who spent a part of the night preceding the solemn festivals in prayer, to prepare themselves for the coming celebration.

VIL'LEIN, a name given, in ancient times, to persons not proprietors of land, many of whom were attached to the land, and bound to serve the lord of the manor. [See FEUDAL SYSTEM.]

VIL'LUS, in botany, a term applied by Linnæus to the soft close hairs on different parts of plants, which form a fine nap or pile like velvet.

VINA'LIA, in antiquity, a festival observed by the Romans Aug. 19, in honour of Jupiter and Venus.

VINE, in botany, a plant of the genus *Vitis*, that produces grapes, common in most warm and temperate countries, and of which there are an immense number of varieties. In Italy, Spain, and France, the vineyards cover large tracts, and the manufacture of wine is an important branch of industry. The trees are cut down and exhibit the appearance of gooseberry bushes, those grapes ripening the best that are nearest the ground. That wine is the strongest, and has most flavour, in which both the skins and stones are bruised and fermented. As a general rule, the varieties most esteemed for wine-making have small berries and bunches, with an austere taste. In certain localities, the vine lives only twenty or thirty years; but under favourable circumstances it may last several hundred. There can be little doubt that the cultivation of the vine was introduced into this country by the Romans. Vineyards are mentioned in "Domesday Book;" and it is known that the abbeys and religious houses usually possessed a vineyard. The inmates of these institutions were many of them foreigners, and they contributed to render the cultivation of the vine tolerably successful. The names of several places in Kent are supposed to be derived from their having been the site of vineyards. In the reign of Henry II., the cultivation of the vine in England began to be neglected. Our intimate connection with France—our actual possession, indeed, of a portion of the wine-growing districts of that country —contributed to produce this circumstance. But though the making of wine was no longer carried on in so extensive a manner, yet there is sufficient testimony that during the 16th and 17th centuries, a considerable quantity of wine was made in England from the produce of the grape. [For further observations on this subject, see the article "GRAPE."]—The word *vine* also denotes the long slender stem of any plant that trails on the ground, or climbs and supports itself by winding round a fixed object, or by seizing any fixed thing with its tendrils or claspers.

VIN'EGAR, or ACE'TIC ACID, an acid liquor obtained from wine, cider, beer, or other liquors, by the acetous fermentation. The varieties of acetic acids known in commerce are five: 1. wine vinegar; 2. malt vinegar; 3. cider vinegar; 4. sugar vinegar; 5. wood vinegar. In Great Britain vinegar is usually made of malt; though a very considerable quantity, made for family use, is made from cider and British wines.

VI'NERY, in gardening, an erection for supporting vines and exposing them to artificial heat, consisting of a wall with stoves and flues.

VINIFACTEUR [Fr.], a method made use of in France and Spain to improve the spirituous fermentation of wine. During the fermentation, a portion of the etherial parts of the wine escapes from the open vats; and the *vinifacteur* is intended to collect these parts, and to convey them back to the *must*. It is a cap, put on the vat, and surrounded by cold water in a vessel, in order to condense these vapours. The cap is provided with a tube to admit of the escape of the gaseous parts which do not condense.

VI'NOUS FERMENTATION, that important process by which wine, beer, cider, &c. are made, and from which, by distillation, result all spirits. It is effected by well combining saccharine matter with water,

VINEGAR IS BOILED FOR PICKLING, THAT THE IMPURITIES, COAGULATED BY HEAT, MAY BE SEPARATED BY SKIMMING, WHEN COOL.



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[See EYE, OPTICS, &c.] In Scripture, *visions* signify revelations from God; an appearance of something supernaturally presented to the minds of the prophets, by which they were informed of future events; as, the visions of Isaiah, Ezekiel, &c.—With regard to those mental and optical illusions which have given rise to stories of ghosts and apparitions, they are all either produced by a disordered state of the mind, or occasioned by the presence of some external object, under such circumstances as to deceive the senses. Dr. Abercrombie, in his "Inquiries concerning the Intellectual Power," treating of spectral illusions, refers them to the following heads:—1. False perceptions or impressions made upon the senses only, in which the mind does not participate. 2. Real dreams, though the person was not at the time sensible of having slept, nor, consequently, of having dreamt. A person, as he observes, under the influence of some strong mental impression, drops asleep for a few seconds, perhaps, without being sensible of it; some scene or person connected with the impression appears in the dream, and he starts up under the conviction that it was a spectral appearance. 3. Intense mental conceptions, so strongly impressed on the mind as, for the moment, to be believed to have a real existence. This takes place, when, along with the mental emotion, the individual is placed in circumstances in which external impressions are very slight, as solitude, faint light, and quiescence of body. It is a state bordering closely upon dreaming, though the vision occurs while the person is in the waking state. 4. Erroneous impressions connected with bodily disease, generally disease in the brain. The illusions in these cases arise in a manner strictly analogous to dreaming, and consist of some former circumstances recalled to the mind, and believed for a time to have a real and present existence. The diseases in connexion with which they arise, are generally of an apoplectic or inflammatory character, sometimes epileptic; and they are very frequent in the affection called *delirium tremens*, produced by a continued use of intoxicating liquors.

VISITATION, in ecclesiastical polity, an office or act of superintendence performed by a bishop once in three years, by visiting the churches and their rectors, &c. throughout the whole diocese. Parochial visitation by the archdeacons is annual.

VIS'ITOR, in law, an inspector into the government of a corporation.

VIS'UAL. In perspective, the *visual point*, is a point in the horizontal line, in which all the ocular rays unite.——*Visual rays*, lines of light, imagined to come from the object to the eye.

VITAL FUNCTIONS, those functions or faculties of the body on which life immediately depends; as the circulation of the blood, respiration, the heat of the body, &c.

VI'TIS, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The principal species are the *Vitis vinifera*, the common vine, and the *Vitis Indica*, the Indian vine.

VIT'REOUS HU'MOUR, the pellucid body which fills the whole bulb of the eye behind the crystaline lens.

VITRIFAC'TION, the act, process, or operation of converting into glass by heat; as, the *vitrifaction* of sand, flint, and pebbles, with alkaline salts.

VIT'RIOL. [See COPPERAS, SULPHUR, &c.]

VIT'RIOLATED, in chemistry, converted into sulphuric acid or vitriol.

VITRIOL'IC ACID. [See SULPHURIC ACID.]

VIVA'CE, in music, an Italian epithet, signifying lively; and *vivacissimo*, very lively.

VI'VARY, a place for keeping living animals, as a park, a warren, a pond, &c.

VI'VA VO'CE [Lat.], by word of mouth; as, to vote, or to communicate with another person, *viva voce*.

VIVES, in the veterinary art, a disease of horses and some other animals, seated in the glands, under the ears, where a tumour is formed which sometimes ends in suppuration.

VIVIFICA'TION, in chemistry, the act of giving new lustre, force and vigour; as, the *vivification* of mercury.

VIVIP'AROUS, in natural history, an epithet for producing young in a living state; as distinguished from *oviparous*, producing eggs, as birds.——In botany, a *viviparous plant* is one in which either the seeds germinate on the plant, instead of falling, as they usually do, or which produces its living offspring as bulbs.

VIZ'IER, or GRAND VIZIER, the title of the chief minister of the Turkish empire. He is the representative of the sultan, conducts the deliberations of the divan, and decides alone; for by a seal which he receives at the time of his appointment, he is authorized to rule with absolute power, in the name of the sultan. The title of *vizier* is also given to all the pachas of three tails, or pachas of the highest rank.

VO'CAL MU'SIC, music produced by the voice, either unaccompanied or accompanied by instruments. Vocal music has many advantages over instrumental, in its endless variety of intonation and expression, and in the support which it derives from its connexion with words. [See MUSIC.]

VOICE, the sounds produced by the organs of respiration, especially the larynx. The lungs, the wind-pipe, &c., the finely-arched roof of the mouth, and the pliability of the lips, are each of the greatest importance in producing the different intonations which render the human voice so agreeable and harmonious. A good musical voice depends chiefly upon the soundness and power of the organs of utterance and of hearing; and is much promoted by the practice of singing and gymnastic exercises that expand the chest.

VO'LANT, in heraldry, an epithet for flying or having the wings spread.

VOL'ATILE, in chemistry, an epithet for substances which waste or easily pass away

OBJECTS SEEN UNDER THE SAME ANGLE, HAVE THEIR MAGNITUDES IN THE SAME RATIO AS THEIR DISTANCES.

SULPHURIC ACID WAS FORMERLY CALLED OIL OF VITRIOL, FROM BEING OBTAINED BY THE DISTILLATION OF GREEN VITRIOL.



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IN 1767 THE ASHES OF VESUVIUS WERE CARRIED TWENTY LEAGUES OUT TO SEA, AND THE STREETS OF NAPLES COVERED WITH THEM.

pose. It is completely broken up, as far as we can see, into individual atoms; and no scratch upon a mould can be conceived so fine that these, slowly approaching, one by one, cannot enter. The slightest imperfection in polish on the plate will be rigorously copied in reverse by the deposit; every depression of an atom's breadth in the former will be answered by a corresponding elevation on the latter. The mind cannot conceive anything surpassing this in the art of metal founding. The next step could only be the founding of the atoms.——*Method of engraving in relief on a plate of copper.* This is effected by taking the plate on which we are to engrave, and soldering a piece of wire to the back of it, so as to adapt it to the circle. It is then covered with a coating of wax, somewhat less than one-eighth of an inch in thickness. Upon the surface of this coating we have to write or draw with a black lead pencil or steel point the design that we wish to engrave, or rather *raise* upon the plate. We then take a graver and cut the wax through to the copper, along all the lines that were marked with the pencil, being careful that the copper shall be completely exposed in every part of every line. We have now the design cut or engraved in the wax coating. The end of the graver should be of the form of a thin parallelogram, so as to make the lines or grooves in the wax equally broad at the bottom and the top. In order that the wax may be thoroughly cleaned out of the lines of exposed copper, the plate must next be immersed in dilute nitric acid (about three parts of water to one of acid), and allowed to remain till a very slight corrosion of the exposed parts takes place. The particles of wax that the graver has not removed are driven off by the fumes of the acid so as to do no further harm. The plate is now to be put in its place in the sulphate of copper solution, in the outer trough of the apparatus, a plate of zinc of equal size placed in the inner vessel, and the circle completed. The decomposition of the sulphate of copper begins, and the particles of copper, going in the direction of the positive current, resort to the coated plate. As they require a metallic nucleus before they can cohere or crystalize, they cannot deposit themselves on the wax, and therefore they only fall into the lines where the wax is cut through, and the copper exposed. By filling up these cavities in the wax, ridges or projections of copper are gradually built up on the plate. When these are on a level with the coating, the process is stopped, and the plate taken out; care being taken, should the deposit not be sufficient, not to allow the surface of the plate to become dry, otherwise a fresh deposit will take place when returned to the solution, which new deposit will mar the operation entirely, as the new surface when printed on will be found to separate from the former one. Should the surface of the deposit be not perfectly smooth, it may be rubbed with a piece of smooth flag or pumice stone with water; after which, by applying heat and using spirits of turpentine, the wax is washed off, leaving on the plate a copy in relief of the design cut out in the coating. The plate can now be printed from at an ordinary printing press. If the wax has been completely removed from the lines by the graver and the nitric acid, the deposit adheres as firmly to the plate as if it were a part of it. Thus we have an original species of welding or connecting pieces of metal together. Ordinary welding depends upon the partial liquefaction of the two pieces by heat; but here we can connect them without heat or liquefaction, by reducing one to atoms and depositing it on the other. The strength and solidity of the deposit depends on the slowness with which it has gone on. The slower and more deliberately the particles fall into their places, as it were, the more perfect the atomic structure which is built up. When the operation is too quick the metal formed resembles glass suddenly cooled, it is exceedingly brittle. Forty-eight hours is the least time that should be allowed for the formation of a relief design, but four or five days are required for a plate of strength and solidity. The process may be quickened if we increase the temperature, for it seems this causes the particles to arrange themselves with greater perfection in the same time. It is for multiplying copper-plate engravings that the new art promises to be the most eminently useful. Although from the great durability of steel, ten-fold the number of impressions can be taken from a steel plate than from one of copper, the latter is generally preferred by engravers as a much pleasanter material to work upon, and is always used for the highest order of historical engravings. By the new process the objection against copper, that the plate is soon worn out, is done away with, because any number of electrotype duplicates of the original plates can now be taken at a very inconsiderable expense, and the impressions therefore multiplied *ad infinitum*. A wood engraving may be operated with in the very same manner. It being in relief, the pressure required is only what is necessary for medals, and is not found to injure the design. It is a great and fertile principle both in art and science. Its advantages in the arts are exemplified by what we have already described as its achievements; but we can easily imagine a much wider application of it. The very fact that we have metal in a state of entire disintegration, ready to go where we please, and re-construct itself in any form we please, will suggest many important uses to which it may be turned. The application of the agency of fire to melt looks rude and old-fashioned compared with the application of the agency of electricity to resolve into atoms; and we have no doubt that there are many cases in which the latter will displace the former. The worth of this principle to science must also be great. The ultimate particles of matter can never be directly viewed by the eye; but here is a case in

VOLCANOES OFTEN EJECT NATIVE SUBSTANCES, SUCH AS QUARTZ, CRYSTALS OF AMETHYST, AGATE, GYPSUM, MICA, SPELLAR, &C.



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VULTURE *(vultur)*, in natural history, a genus of birds of the order *Accipitres*. The birds of this genus are rapacious to an extreme degree, and sometimes feed in the midst of cities unterrified. They prefer food that is tainted to that which is fresh: they are found most numerous in warm climates, and must be regarded as a race of creatures eminently useful in clearing the surface of the globe from putrid remains, which would otherwise infect the air, and produce all the ravages and mortality of pestilence. There are seventeen species, of which we shall notice only the *Vultur Sagittarius*, or the secretary vulture, which is distinguished for its size, being when standing upright full a yard high. It is found in Africa, and in the Phillippine islands; and lives on vermin. It takes up tortoises in its claws, and dashes them to the ground with the greatest violence, and will repeat the process till these animals are completely killed. The *condor* is the largest of the vulture species.

# W.

W, the twenty-third letter of the English alphabet, takes its written form from the union of two V's, and its name of *double u* from the Roman capital V representing that which we call U. In English it is always followed by a vowel, except when followed by *h*, as in *when*, or by *r*, as in *wrong*. The *w*, being a strong breathing, is nearly related to all aspirated sounds, and through them again to the gutturals, so that we find *w* and *g* often interchanged in different languages, as in the words *William*, *Guillaume*, &c.

WACK'E, in mineralogy, a siliceous earth, intermediate between clay and basalt. Its colour is a greenish gray, brown, or black; it is opaque, and unctuous to the touch.

WAD, or WAD'DING, a stopple of paper, tow, old rope-yarn, &c. forced into a gun, to keep in the powder and shot.

WADD, In mineralogy, plumbago or black lead. Black wadd is an ore of manganese found in Derbyshire. There are four kinds; fibrous, ochery, pulverulent, and dendritic.

WAD'SETT, an ancient tenure or lease of land in the Highlands of Scotland, which seems to have been upon a kind of mortgage.

WA'GER OF BATTLE, or BATTEL, an ancient mode of trial by single combat, where, in appeals of felony, the appellee might fight with the appellant to prove his innocence; and it is but recently that this relic of barbarism and injustice has been abolished. It was also used in affairs of chivalry and honour, and in civil cases upon issue joined in a writ of right.

WA'GER OF LAW, the offer, on the part of the defendant in an action of debt by simple contract, to take an oath in court in the presence of eleven compurgators, that he owes the plaintiff nothing in the manner and form as he has declared, whereupon the law allows him his discharge.

WAGES. [See Labour.]

WAG'TAIL, in ornithology, a small bird with long legs and tail, which frequents the margins of ponds and water-courses, and is continually elevating and depressing the tail. It is a species of *motacilla*.

WAIFS, in law, goods found, of which the owner is not known, and which are claimed by the crown. These were originally such goods as a thief, when pursued, threw away to prevent his being apprehended.

WAIN'ABLE, an epithet for land that is tillable, or may be ploughed.

WAIST, in a ship, that part which is between the quarter-deck and forecastle: but in ships where there is no quarter-deck, the waist is the middle part of the ship.——The small part of the body between the breast and hips.

WA'ISTCLOTHS, coverings of canvas or tarpaulings for the hammocks, stowed on the gangways, between the quarter-deck and forecastle.

WAITS, itinerant musicians whose nocturnal perambulations give us notice that the joyful festival of Christmas is approaching.

WA'IVER, in law, the passing by, or declining to accept a thing; applied either to an estate, to a plea, &c.

WA'IWODE, in the Turkish empire, the governor of a small province or town.

WAKE, a vigil: the feast of the dedication of the church, formerly kept by watching all night.——A strange practice of celebrating funeral rites by the lower orders in Ireland, which has been thus described by Miss Edgeworth:—"At night the body is *waked;* that is to say, all the friends and neighbours of the deceased collect in a barn or stable, where the corpse is laid upon some boards, or an unhinged door, supported upon stools, the face exposed, the rest of the body covered with a white sheet. Round the body are stuck, in brass candlesticks, which have been borrowed perhaps at five miles' distance, as many candles as the poor person can beg or borrow, observing always to have an odd number. Pipes and tobacco are first distributed, and then, according to the ability of the deceased, cakes and ale, and sometimes whiskey, are *dealt* to the company." The *lively* scenes which generally follow an exhibition of this kind will, we imagine, be no more heard of, now that Father Mathew has the power to exorcise the demon of in-

IN PROPORTION AS BUILDINGS ARE MASSIVE, THEY ARE RELATIVELY MORE COOL IN SUMMER, AND WARMER IN WINTER.

IN THE TROPICAL REGIONS MANY BIRDS BUILD PENDULOUS NESTS, ATTACHED TO THE BOUGHS OF TREES, TO SECURE THEM FROM SNAKES AND MONKEYS.



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mote court; of this court the inquest has power every year to inquire into all deficiencies with regard to the officers of the ward.

WARD-ROOM, in a ship, a room over the gun-room, where the lieutenants and other principal officers sleep and mess.

WARP, in weaving, the threads which are extended lengthwise in the loom, and crossed by the woof.——In a ship, a rope or towing line, employed in drawing, towing, or removing a boat or vessel.——In agriculture, a slimy substance deposited on land by marine tides, by which a rich alluvial soil is formed.

WAR'RANT, in law, a precept authorizing an officer to seize an offender and bring him to justice.——*Warrant of attorney*, an authority given to an attorney by his client to appear and plead for him; or in a more general sense, that by which a man appoints another to act in his name, and warrants his transaction.——*Search warrant*, a precept authorising a person to enter houses, &c. to search for stolen or contraband goods, or to discover whether a criminal be there concealed.——*Warrant officer*, an officer holding a warrant from the navy board, such as the master, surgeon, purser, &c. of a ship.——*Press warrant*, in the navy, a warrant issued by the admiralty, authorizing an officer to impress seamen.

WAR'REN, a franchise or privileged place for keeping beasts and fowls of the warren, as hares, partridges, and pheasants.

WAR'RANTY, in law, a covenant by deed, made by one party to another, to secure to him the enjoyment of an estate or other thing bargained for. Warranty is *real*, when annexed to lands and tenements granted in fee or for life, &c., and *personal*, when it respects goods sold or their quality. If a man sells goods which are not his own, or which he has no right to sell, the purchaser may have satisfaction for the injury. And if the seller expressly warrants the goods to be sound, and they prove to be otherwise, he must indemnify the purchaser. But the warranty must be at the time of sale.

WASP (*Vespa vulgaris*), an insect, the female of which has a sting, which it employs when attacked, or in supposed danger. Their nests are highly curious structures, divided into cells, with walls made of vegetable substances; as they do not lay up honey like bees, they die, or are torpid in the winter. The *hornet* is larger than the wasp, and forms its nest in holes or roots of trees, but both are equally voracious. [See VESPA.]

WAS'SAIL-BOWL, a large drinking vessel, in which the Saxons, at their public entertainments, drank health to each other, saying, "Wæs hæl!"—"Health be to you!" or "Your health!" It was also a Saxon custom, to go about with such a bowl, at the time of the Epiphany, singing a festival song, drinking the health of the inhabitants, and, of course, collecting money to replenish the bowl. This custom, from which christmas-boxes, christmas-ale, bell men's verses, and carols, are all, probably, more or less derived, was called *wassailing*, and those who practised it, *wassailers*. In some parts of the kingdom, the primitive custom, and its name, are still retained.

WASTE, in law, an epithet for lands which are not in any man's occupation, but lie common; so called because the lord cannot make such profit of them as of other fields.

WATCH AND WARD, the custom of watching by night, and warding or keeping the peace by day in towns and cities, which was first appointed by Henry III.

WATCH, in the marine, denotes the space of time during which one division of the ship's crew remains upon deck, to keep watch at night. It never exceeds four hours, and is divided into three parts; namely, the *first watch*, from 8 to 12, the *middle watch* from 12 to 4 in the morning, and the *morning watch* from 4 to 8. There are also what are called *dog-watches*, which consist of only two hours, by the division of the morning watch into two parts.——"To set the *watch*," to appoint the division of the crew to enter upon the duty of the watch. "To relieve the *watch*," to relieve those who have been upon the duty by changing the watch.——*Watch-bill*, a list of the officers and crew who are appointed to the watch, together with the several stations to which each man belongs.

WATCH, a pocket instrument for measuring time, in which the machinery is moved by a steel spring, coiled up, and acting by various ingenious contrivances. The spring is in a brass box, called the barrel, and combined with a pyramidal fusee, on which a connecting chain is wound by the key. The spring being fastened at one end to the barrel, and at the other end to an arbor, or axle, unwinds off the fusee, turning it, and keeping the watch going, while the action accords by its various size with the varied energy of the spring. The force being thus produced, other wheels are put in motion, and time is exactly measured by the hands on the dial. This manufacture consists of almost innumerable departments, of which the fifteen principal are: 1. The movement maker, who divides it into various branches; viz. pillar-maker, stop stud-maker, frame-mounter, screw-maker, cock and potence-maker, verge-maker, pinion maker, balance-wheel-maker, wheel-cutter, fusee-maker, and other small branches. 2. Dial-maker; who employs a copper-maker, an enameller, painter, &c. 3. Case-maker; who makes the case to the frame, employs box-maker, outside case-maker, and joint-finishers. 4. Pendant-maker (both case and pendant are sent to Goldsmiths'-hall to be marked). 5. Secret-springer and spring-liner; the springer and liner are divided into other branches; viz. the spring-maker, button-maker, &c. 6. Cap-maker, who employs the springer, &c. 7. Jeweller; which comprises the diamond cutting, setting, making ruby-holes, &c. 8. Motion maker, and other

WATCHES, WITH SPRINGS, WERE FIRST MADE AT NUREMBERG, IN GERMANY, ABOUT THE YEAR 1477.

THE BEATS IN AN HOUR IN A COMMON WATCH ARE 17,280, AND IN A COMMON SECONDS' CLOCK THEY ARE 3600.



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IN PERSIA, NO ANABLE CULTURE IS CARRIED ON WITHOUT ARTIFICIAL WATERING, AND VARIOUS SIMPLE WATER-WHEELS ARE USED FOR IT.

a stream of running water, and a common application of power for grinding corn and other purposes.——*Overshot wheel*, a variety of water-wheel, by which water falling on its upper periphery, carries it round, not only by its force, but by its accumulated weight; for it is so constructed as to catch and hold the water in descending, part with it at the bottom, and ascend on the other side empty; and it is a very convenient and powerful structure when the nature of the ground permits.——*Wheel*, in the military art, is the word of command, when a battalion or squadron is to alter its front either one way or the other. To wheel to the right, directs the man in the right angle to turn very slowly, and every one to wheel from the left to the right, regarding him as their centre; and *vice versâ*, when they are to wheel to the left.

WHEEL'-FIRE, in chemistry, a fire for melting metals, &c. which covers the crucible, cupel, or melting-pot, &c.

WHEEL-WORK. Of all the modes of communicating motion, the most extensively useful is the employment of wheel-work, which is capable of varying its direction and its velocity without any limit. Wheels are sometimes turned by simple contact with each other; sometimes by the intervention of cords, straps, or chains, passing over them; and in these cases the minute protuberance of the surfaces, or whatever else may be the cause of friction, prevents their sliding on each other. In light work, where the pressure on the machinery is not very considerable, the wheels and axles are allowed to work by the friction of their surfaces, which is increased by cutting the wood so that the grains of the surfaces in contact shall run in opposite directions; also by gluing upon the surfaces of the wheels and axles buffed leather. There are other ways of transmitting the force of each axle to the circumference of the succeeding wheel. A very common method is, by ropes, straps, bands, or belts, round the circumference of the wheel and axle, which act upon each other. The action is in this manner transmitted by the tension of the rope or strap, and rendered effective by friction with the circumferences on which it is rolled. Wheels and axles connected in this manner are called *band-wheels*. In cases where motion not quite equable is required, as it sometimes happens in the construction of clocks, but more frequently in orreries, the wheels may either be divided a little unequally, or the axis may be placed a little out of the centre; and these eccentric wheels may either act on other eccentric wheels, or if they are made as contrate wheels, upon a lengthened pinion. An arrangement is sometimes made for separating wheels which are intended to turn each other, and for replacing them at pleasure: the wheels are said to be thrown by these operations out of gear and into gear again. When a wheel revolves round another, and is so fixed as to remain nearly in a parallel direction, and to cause the central wheel to turn round its axis, the apparatus is called a *sun and planet wheel*. The teeth of wheels of metal are generally cut by means of a machine. Wheels are denominated *spur*, *crown*, or *bevel-gear*, according to the direction or position of the teeth. If the teeth are perpendicular to the axis of the wheel, and in the direction of its radii, it is called a *spur-wheel*. If the teeth are parallel to the axis of the wheel, and therefore perpendicular to its frame, it is called a *crown-wheel*. Two spur-wheels, or a spur-wheel and pinion which work in one another, are always in the same plane, and have their axes parallel; but when a spur and crown-wheel are in connexion, their planes and axes are at right angles. When the teeth are oblique to the plane or axis-wheel, it is called a *bevelled-wheel*; the use of which is to produce a rotatory motion round one axis, by means of a rotatory motion round another which is oblique to it.

WHEE'ZING, in the veterinary art, a disordered respiration in horses arising from the narrowness of the passages between the bones and the gristles of the nose.

WHELK, in conchology, a shell of the genus *Buccinum*, or trumpet-shell, univalvular, spiral and gibbous, with an oval aperture ending in a short canal.

WHET'STONE, in mineralogy, the *Arenarius noracularis* in the Linnæan system, so called from its property of whetting or sharpening steel.

WHEY, the serum or watery part of milk, which remains after the cream and coagulable matter of that fluid are removed, either by churning, or by separating it with rennet, vinegar, cream of tartar, &c.

WHIG, one of a political party which had its origin in England in the 17th century, in the reign of the Stuarts, when great contests existed respecting the royal prerogatives. Those who supported the king in his high claims were called *Tories*, and the advocates of popular rights were called *Whigs*. The following remarks from a celebrated Whig journal (Edinburgh Review, vol. xxxvii. p. 21-25), may serve to show the state of parties at the accession of the house of Hanover. "It divided England into two parties, the Whigs, or friends of the new establishment, and the Tories and Jacobites, its secret or avowed opponents. The Tories, bigotted to the notion of indefeasible right in the succession to the crown, but apprehensive for their religion if a papist should mount the throne, were distracted between their scruples about the validity of a parliamentary settlement, and their fears, lest, in subverting it, they might restore, or pave the way for the restoration of the Catholic church. Though deterred, by their religious fears, from embarking decidedly in the cause of the Pretender, they kept on terms with his friends, and were not unwilling to disturb, though they hesitated to overturn, a government they disliked, because it was founded on principles they abhorred. The Jacobites, though most of them were zeal-

BURNET, IN HIS "MEMOIRS," SAYS THAT THE WORD "WHIGGAM" USED BY THE SCOTCH IN DRIVING THEIR HORSES, WAS THE ORIGIN OF THE WORD "WHIG."



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acid, and suspending them in the air until the surface becomes incrusted with a white coat, which is the substance in question.

WHITE-PRECIPITATE, in chemistry, carbonate of mercury.

WHITE-PYRITES, in mineralogy, an ore of a tin-white colour, passing into a deep yellow and steel gray, occurring in octahedral crystals, sometimes stalactitical and botryoidal. It contains 46 parts of iron and 54 of sulphur.

WHITESTONE, in geology, a species of rocks composed essentially of feldspar, but containing mica and other materials. It is sometimes termed *eurite*.

WHITE-SWEL'LING, in medicine, a chronic enlargement of the joints, without any alteration in the colour of the skin, sometimes hard, sometimes yielding to pressure, sometimes indolent, but usually painful.

WHITE-THORN, in botany, the hawthorn, a species of thorn, of the genus *Crataegus*.

WHITE-THROAT, in ornithology, the *Motacilla sylvia*, a small bird that frequents gardens and hedges.

WHITE-VITRIOL, in mineralogy, sulphate of zinc, a natural salt.

WHITEWASH, a composition of lime and water, used for whitening the plaster of walls and ceilings.

WHITING, in ichthyology *(gadus merlangus)*, a small and delicate fish, very abundant along the northern coasts of Europe. It makes its appearance in large shoals, and is taken by the line in great numbers.

WHITLOW, in surgery, *paronychia*, a swelling or inflammation about the nails or ends of the fingers, generally terminating in an abscess. Whitlows differ very much in their degree of violence, and in their depth and extent; and they are much more common in young healthy persons than in others.

WHITSUNTIDE, the fiftieth day after Easter, and which is properly called *Pentecost*. It is said to have received its popular name from the circumstance that, formerly, people newly baptized came to church between Easter and Pentecost in *white* garments.

WHYNN-DYKES, in mineralogy, dykes, banks, or natural walls of whin-stone, a peculiar species of basalt, found in various parts of the world, but nowhere on so grand and stupendous a scale as on the Scotch and Irish coasts.

WICKLIFFITES, a religious sect which sprung up in England in the reign of Edward III., and took its name from John Wickliff, doctor and professor of divinity in the university of Oxford, who maintained that the substance of the sacramental bread and wine remained unaltered after consecration; and opposed the doctrine of purgatory, indulgences, auricular confession, the invocation of saints, and the worship of images. He made an English version of the Bible, and composed two volumes, called Alethein, that is, Truth, from which John Huss learned most of his doctrines. In short, to this reformer we owe the first hint of the reformation, which was effected about two hundred years after.

WIGWAM, a name given by the English to the huts or cabins of the North American Indians.

WILL, that faculty of the mind by which we determine either to do or forbear an action. The will is directed or influenced by the judgment. The understanding or reason compares different objects, which operate as motives; the judgment determines which is preferable, and the *will* decides which to pursue. The freedom of the will is essential to moral action, and is the great distinction of man from the brute.

WILL or TESTAMENT, the disposition of a person's estate, to take effect after his or her decease. After January, 1838, all wills made in England came under the provisions of a new act of parliament. By it, all property may be disposed of by will; all wills must be in *writing*, and each must be signed at the bottom or end by the testator, or, if he is unable, by some person on his behalf, by his direction, and in his presence; and two or more attesting witnesses (who must be present at the same time), must also sign the will. If the testator wishes to acknowledge or reward the attesting witnesses, he must do it in some other way than by bequeathing them anything; for legacies to attesting witnesses, or to the wife or husband of an attesting witness, are void. No person under twenty-one can make a valid will. Wills are revoked by subsequent marriage; otherwise a will can only be revoked by destruction, or by the making of a new one; and alterations in wills must be made in the same manner as a will is made. Wills are to be construed as if made immediately before the death of the testator, unless a contrary intention is expressed; and properties bequeathed in general terms include all property in the possession of the testator at his decease, whether acquired before or after the will was made.

WIL'LOW, in botany, a tree of the genus *Salix*, of which there are several species. The *weeping willow*, called *Salix Babylonica*, has long and slender branches, which droop and hang downward in graceful tresses. The willow was, in ancient days, especially among herdsmen and rustics, *a badge of mourning*, as may be collected from Virgil, in his Eclogues, where the nymphs and herdsmen are frequently introduced, sitting under a willow mourning their loves. The same occurs in many Greek poets. For the ancients frequently selected, and, as it were, appropriated several trees, as indexes or testimonials of the various passions of mankind. From them we continue, at this day, to use *rue* and *rosemary* at funerals; these two being representatives of a dead person, and *willow*, of *love*, *dead*, or *forsaken*. The Jews, upon their being led into captivity, (*Ps.* cxxxvii,) are said to hang their harps upon *willows*, *i. e.* trees appropriated to men in affliction and sorrow, who had lost their beloved Sion.





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fectly annihilated in that country till the early part of the last century.

WOLF-FISH, in ichthyology, the *Lupus marinus*, a fierce and voracious fish of the northern seas.

WOL'FRAM, in mineralogy, is the native tungstate of iron and manganese, which occurs in primitive formations, along with the ores of tin, antimony, and lead, in North America, Bohemia, Switzerland, Cornwall, &c. Tungsten and tungstic acid are obtained from it.

WOL'VERIN, or WOL'VERENE (*ursus gulo*), in zoology, a quadruped of North America: a variety of the glutton.

WOMAN, the female of the human race, grown to an adult age. In the patriarchal ages women were used agreeably to that simplicity of manners which for a long time after pervaded all nations. They drew water, kept sheep, and fed the cattle; as may be observed in what is related of Rebecca, the niece of Abraham, and Rachel, the daughter of Laban. Among the Greeks and Romans, women were employed in spinning, weaving, embroidery, and all sorts of needle-work; their education being wholly confined to their domestic duties. It is in the Christian home only that woman reigns—the mother, sister, wife, and friend. The influence of Christianity gave woman a new station in society, broke her chains, and released her from the degrading restrictions in which she had almost become the soulless thing which she had been represented to be. As man ceased to be a mere citizen of his own country, and felt himself to be a citizen of the world, so woman was restored to her natural rights. "In every age and country (says Gibbon), the wiser, or at least the stronger, of the two sexes has usurped the powers of the state, and confined the other to the cares and pleasures of domestic life. In hereditary monarchies, however, and especially in those of modern Europe, the gallant spirit of chivalry, and the law of succession, have accustomed us to allow a singular exception; and a woman is often acknowledged the absolute sovereign of a great kingdom, in which she would be deemed incapable of exercising the smallest employment, civil or military. But as the Roman emperors were still considered as the generals and magistrates of the republic, their wives' mothers, although distinguished by the name of Augusta, were never associated to their personal honours; and a female reign would have appeared an inexpiable prodigy in the eyes of those primitive Romans who married without love, or loved without delicacy and respect."—Born to feel and inspire the kind and tender affections, it is the fault of men if well-educated females become not the grace and ornament of society. This, at least, is the rule; the reverse of this, the exception. In our treatment of the sex, there is a just medium to be observed—as far removed from their humiliation, as it is from that extravagant homage which stops at nothing short of their deification. Woman is the equal and companion of man—not the plaything of his caprice, nor the slave of his passions. When unpolluted by the breath of sensuality, and unattacked by the more insidious venom of seductive adulation, if in youth her mind has been properly directed, her character will stand forth in all the majesty of native dignity, in all the grace of virtuous simplicity. With such a being pictured to his imagination, well might the poet exclaim,

"Oh she is all that soul can be,
One deep, undying sympathy!"

WON'DER, that emotion which is excited by something presented to the senses which is either sudden, extraordinary, or not well understood. The word *wonder* is nearly allied to *astonishment*, though it expresses less, and much less than *amazement*.——Among the ancients, *the seven wonders of the world* were—the Egyptian pyramids—the mausoleums erected by Artemisia—the temple of Diana, at Ephesus—the walls and hanging gardens of Babylon—the colossus at Rhodes—the statue of Jupiter Olympus—and the Pharos or watch-tower at Alexandria.

WOOD, the hard and fibrous substance of trees, consisting of the heart-wood in the centre, and the sap-wood on the outside, in which the concentric circles determine the age of the tree. [For the growth, structure, and properties of wood, we refer to BOTANY, PLANTS, &c.]——*Petrified wood.* Wood, in ordinary circumstances, whether upon the surface of the earth, or buried under it, is gradually decomposed by the concurrent action of air and water; its texture is broken down, the connexion between its several vegetable principles of which it consists is dissolved, its ingredients enter into new combinations, and no vestige remains either of its organization or chemical properties. Sometimes, however, it happens that the external figure and internal arrangements are preserved, while the chemical properties have undergone very remarkable alterations; in consequence of which the natural decay is prodigiously retarded, and often nearly wholly suspended. Wood that has undergone this change is said to be *petrified*. There are three substances by which this change may be brought about; namely, pyrites, oxyde of iron, and siliceous earth in the form of agate or horn-stone. These constitute so many species of petrified wood. The *pyritous fossil wood* occurs principally in the independent coal formation: it is composed entirely of common pyrites, often in a state of semi-decomposition; it appears to contain no ligneous particles, but retains with considerable exactness the external figure, and, in some degree, the internal organization of wood. The reason why this species presents a less striking resemblance to wood than the others do, is probably the strong crystaline polarity which pyrites possesses: in splitting longitudinally a piece of pyritized wood, it not unfrequently happens, that the fibres



ACCORDING TO THE MOST ACCURATE TABLES OF LONGEVITY, THE AVERAGE LIVES OF WOMEN ARE LONGER THAN THOSE OF MEN.

THE ATHENIANS AND ROMANS KEPT THEIR WOMEN UNDER GREAT RESTRAINTS, BUT THE LACEDEMONIAN VIRGINS WERE QUITE WITHOUT VEILS.

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nitary of the church, whom we well knew, induced him to recommend from the pulpit the general adoption of *bran puddings*; adding, that as he had them regularly served up at his own table, he could vouch for their being both nutritious and palatable. But, alas! it would seem that the benevolent divine—for such he really was—knew little of the economy of his own *cuisine*. Some wag, suspecting the doctor had been duped, feed his cook; and the important secret was blazoned forth—that a dozen eggs, with a proportionate quantity of milk, sugar, spices, and a dash of brandy, added to a table-spoonful of *bran*, would make a very nutritious and palatable pudding!

WOOD'COCK, in ornithology, a fowl of the genus *Scopolax*, inhabiting the northern parts of the European continent in summer, but frequenting England in winter.

WOOD'COCK-SHELL, in conchology, a name given to a peculiar kind of the *purpura*, called by the French *becasse*. There are two species, the smooth and the prickly.

WOOD-ENGRAVING, or wood-cutting, the art of cutting figures in wood, that they may be printed by the same process as common letter-press. The mode of engraving on wood is exactly the reverse of that of copper-plate, the parts intended to appear being raised on the surface. The wood which is used for the purpose of engraving, is that of the box-tree, of which a considerable quantity is imported from Turkey. The design drawn upon the wood is the reverse of the object copied, so that when the impression is taken from the engraving, the object is correctly represented.

WOOD'PECKER (*picus*), in ornithology, a bird noted for its clinging to the trunks of trees, and holding its body upright, while it strikes or pecks holes in the bark, in search of insects which are sheltered in the crevices. There are many varieties; and the plumage of all of them is composed of the most striking colours.

WOOD'-PIGEON *(Columba palumbus)*, in ornithology, the ring-dove. [See PIGEON.]

WOOD-PU'CERON, in entomology, a small insect of the puceron kind, which penetrates into the wood. It is of a grayish colour, having two hollow horns on the hinder part of its body.

WOOD'-GELD, in our ancient customs, the gathering or cutting of wood within the forest; or the money paid for the same to the foresters. Sometimes it also seems to signify an immunity from this payment by the king's grant.

WOOD'-STONE, in mineralogy, a blackish gray siliceous stone, a subspecies of horn-stone.

WOOF, the cross threads in weaving, introduced by the shuttle, when part of the warp is raised.

WOOL, the fleecy coat of the sheep, which in fineness sometimes approaches fur. Wool, like the hair of horses, cattle, and most animals, completes its growth in a year, and then falls off as hair does, and is succeeded by a fresh crop. It differs from hair, however, in the uniformity of its growth, and the regularity of its shedding. Hairs are commonly of the same thickness in every part; but wool constantly varies in thickness in different parts, being generally thicker at the points than at the roots. While the wool yet remains in the state it was first shorn off the sheep's back, and not sorted into its different kinds, it is called a *fleece*. The wool of the same animal differs much on the various parts of the body; that on the back and the sides being the best. The great difference in the wool of different sheep depends, in general, upon their descent, the crossing of breeds, climate, food, age, manner of living, and other circumstances. Some of the most scientific "wool-growers" maintain, that the degree of softness (the most valuable quality in wool) depends principally on the nature of the soil on which sheep are fed; that sheep pastured on chalky districts, or light calcareous soil, usually produce hard wool; while the wool of those that are pastured on rich, loamy, argillaceous soils, is always distinguished by its superior softness. Wool, either in araw or a manufactured state, has always been the principal of the staple articles of this country. The price of wool was, in very early times, much higher, in proportion to the wages of labour, the rent of land, and the price of butcher's meat, than at present. It was, before the time of Edward III. always exported raw, the art of working it into cloth and dyeing being so imperfectly known, that no persons above the degree of working people could go dressed in cloth of English manufacture. The first step taken to encourage the manufacture of woollen cloths was by Edward III., who procured some good workmen from the Netherlands, by means of protection and encouragement. The value of wool was considered so essentially solid, that taxes were vested in that commodity, reckoning by the number of sacks; and in proportion to the price of the necessaries of life, and value of silver, wool was at least three times dearer than it is now. The manufacturing of cloth being once introduced into the country, the policy of preventing the exportation of the raw material was soon evident; and the first act was that of Henry IV. c. 2, by which the exportation of sheep, lambs, or rams was forbidden, under very heavy penalties. From 1660 down to 1825, the export of wool was strictly prohibited: and an idea being generally entertained, that the wool of England was superior to that of every other country, it needed no argument to convince those who were interested in this staple article, that if we succeeded in keeping the raw material at home, we should infallibly command the market of the world for our woollen manufactures. Innumerable statutes were in consequence passed,—the enactments in some of which were the most arbitrary and severe that can be imagined,—to prevent the clandestine exportation of wool; and thus it con-





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WRITING BY CIPHER WAS MUCH USED IN ENGLAND IN THE 17TH CENTURY.



rows, the motions of which on the fore arm may be described as those of flexion, extension, abduction, and circumduction.——In the manege, the *bridle-wrist* is that of the left-hand. A horseman's wrist and his elbow should be equally raised; and the wrist should be two or three fingers above the pommel of the saddle.

WRIT, in law, a precept issued by some court or magistrate in the name of the government, and addressed to a sheriff, his deputy, or other subordinate executive officer, commanding him to do some particular thing. Writs are distinguished into *original* and *judicial*, the former being such as a party sues out without any direction of the court in the particular case; the latter, such as are issued in pursuance of a decree, judgment, or order of a court. A writ, or summons, is called a *subpœna*, when it requires witnesses to appear; a *latitat*, when it is assumed the party is concealed; of *habeas corpus*, when it is to bring up the body; of *premunire*, when it incurs forfeiture of all property; and of *qui tam*, when to recover a fine, of which the prosecutor is to have a share.——These and many others will be found in their respective places in this work.

WRITER TO THE SIGNET, a Scottish attorney at law, but under stricter regulation than English attorneys. *Writers, or Clerks to the Signet*, as they are also called, are chiefly employed in civil trials before the court of session: they likewise prepare the warrants of all charters of lands flowing from the crown; all summonses for citing parties to appear in the court of session; all diligences of the law for affecting the person or estate of a debtor, or for compelling implement of the decrees of the supreme court.——*Writer of the Tallies*, an officer of the English exchequer; a clerk to the auditor of the receipt, who writes upon the tallies the whole of these tellers' bills.

WRITING, the art and act of expressing and conveying our ideas to others by letters or characters visible to the eye. Without its aid the experience of each generation would have been almost entirely lost to succeeding ages, and only a faint glimmer of truth could have been discerned through the mists of tradition. The most ancient remains of writing, which have been transmitted to us, are upon hard substances, such as stones and metals, which were used for edicts and matters of public notoriety. Thus we read that the decalogue was written on two tables of stone; but this practice was not peculiar to the Jews, for it was used by most of the Eastern nations, as well as by the Greeks and Romans. The laws penal, civil, and ceremonial, among the Greeks, were engraven on tables of brass, called *cyrbes*. The Chinese, before the invention of paper, wrote or engraved with an iron tool, or style, upon thin boards or on bamboo. Pliny says, that table-books of wood were in use before the time of Homer. In later times these tables were usually waxed over, and written upon with a style. What was written upon the tables which were thus waxed over was easily effaced, and by smoothing the wax new matter might be substituted in the place of what was written before. The bark of trees was also used for writing by the ancients, and is so still in several parts of Asia. The same may be said of the leaves of trees. But the Greeks and Romans continued the use of waxed table-books long after the use of papyrus, leaves, and skins became common, because they were so convenient for correcting extemporary compositions. [See PAPER, PAPYRUS, &c.]——Where writings have been effaced for fraudulent purposes with muriatic acid, sulphuret of ammonia and prussiate of potash will revive the writing, and discover the artifice. Very old writing may be revived in this way. If indigo and oxyde of manganese be added to common ink, it will prevent its being effaced by oxymuriatic acid.

WYVERN, in heraldry, a kind of flying serpent, an imaginary animal, occasionally represented in coats of arms.

# X.

X, the twenty-fourth letter of the English alphabet, is borrowed from the Greek. When used at the beginning of a word, it has precisely the sound of *z*, but in the middle and at the end of words, its sound is the same as *ks*; as, *wax*, *luxury*, *taxation*, &c. In French, *x* has the various pronunciations of *s*, *ss*, *gz*, and *z*, according to circumstances. The Italians never use it, on account of its guttural character, but express it by *ss*, as in *Alessandro*; and the Germans generally substitute for it *ks*, *gs*, or *chs*. X begins no word in our language but such as are of Greek original; and is in few others but what are of Latin derivation. As a numeral, X stands for ten. When laid horizontally, thus ⋈, it stands for a thousand, and with a dash over it, ten thousand. As an abbreviation, X stands for *Christ*, as in Xn., *Christian*; Xmas. *Christmas*.

XAN'THIC OXYDE, in chemistry, a very rare species of calculus, of a reddish or yellow colour, soluble both in acids and alkalies; and its solution in nitric acid, when evaporated, possesses a brilliant yellow tint: hence its name.

XAN'THID, or XAN'THIDE, in che-

IF INDIGO AND OXYDE OF MANGANESE BE ADDED TO COMMON INK, IT WILL PREVENT ITS BEING EFFACED BY CHLORINE.

SO DURABLE IS CARBON, THAT THE CHARRED BEAMS AT HERCULANEUM HAVE UNDERGONE NO CHANGE IN EIGHTEEN HUNDRED YEARS.



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BONES MAKE EXCELLENT MANURE, IN CONSEQUENCE OF THE LARGE QUANTITY OF LIME WHICH THEY CONTAIN.

BY THE TOOTH OF AN ANIMAL A NATURALIST CAN TELL WHETHER IT BELONGED TO AN HERBIVOROUS OR A CARNIVOROUS SPECIES.

XYLOG'RAPHY, wood-engraving; the act or art of cutting figures in wood, in representation of natural objects. [See WOOD-ENGRAVING.]

XY'LON, a species of punishment in use among the Greeks, which answered to our putting offenders in the stocks.

XYLOPHYL'LA, in botany, a genus of plants which differs from the *Phyllanthus*, only in having the flowers growing from the notches of the leaf.

XYLO'PIA, in botany, Bitterwood, a Brazilian tree, remarkable for the bitterness which its wood communicates to water.

XYNOE'CIA, an Athenian festival, observed in memory of Theseus having united all the petty communities of Attica into one commonwealth, whose assemblies were ever after to be held in the Prytaneum, at Athens.

XY'RIS, in botany, a plant of the Cape of Good Hope, placed under class 3 *Triandria*, order 1 *Monogynia*, of the Linnæan system. ——Also a name for the *Hyacinthus* of the poets.

XYSTARCH, an officer in the Grecian gymnasium, who presided over the *xystus*, as lieutenant to the gymnasiarch. His business was to superintend the *athletæ* in their exercises in the two *xysti*.

XYS'TER, in surgery, an instrument used for scraping bones.

XYS'TUS, or XYS'TOS, among the Greeks and Romans, a portico covered at the top, designed for the exercise of the wrestlers when the weather did not permit them to contend in the open air. The Xystus made a necessary part of a gymnasium: and the name given to the athletæ who performed their exercises there, was *Xystici*.

# Y.

Y, the twenty-fifth letter of the English alphabet, is sometimes used as a vowel, and at other times as a consonant: as the latter at the beginning of words. In the middle and at the end of words, *y* is precisely the same as *i*; being sounded as *i* long, when accented, as in *reply*, *defy*; and as *i* short, when unaccented, as in *synonymous*, *liberty*, *ability*, &c.——Y, as a numeral, stands for 150, and with a dash over it, for 150,000.——Y, by the Pythagoreans, was made the emblem or symbol of virtue and vice. The broad line at the bottom of the letter, represents the innocency and simplicity of infancy and early youth. The place where it is divided into two parts shows us the years of discretion, when we take the side of wisdom or of folly, and can discriminate what is right from what is wrong. The narrow line on the right exhibits to the fancy the strait path that leads to happiness, and the difficulties which attend a course of virtue. The broad line on the left represents the broad road that leads to destruction, and the seducing blandishments of vice.

YACHT, a sailing vessel, pleasure boat, or small ship with one deck, sufficiently large for a sea voyage. In its original signification it is a vessel of state used to convey princes, ambassadors, and other great personages from one kingdom to another. It is usually fitted with a variety of convenient apartments and suitable furniture. The smaller yachts are generally rigged as sloops.

YAM (*dioscorea sativa*), in botany, the fruit of a slender herbaceous vine, having large tuberous roots, which are much used for food in the East and West Indies. They are eaten either roasted or boiled; are mealy, palatable, nutritious, and easy of digestion; and the flour is also used either for bread or puddings. The *Dioscorea aculeata*, by some considered only an improved variety of the former, is universally cultivated in the East and West Indies, and in all the islands of the Pacific. The varieties are propagated like the potato, but they come to maturity much sooner, and the roots frequently weigh thirty pounds.

YAN'KEE, a word commonly applied to an inhabitant of the United States, as *John Bull* is to an Englishman or *Mynheer* to a Dutchman. It is said to have originated in a corrupt pronunciation of the word *English* by the native Indians of America, who called the early settlers from Great Britain *Yengeese*.

YAP'ON, in botany, the *Ilex cassine*, or south-sea tea; a shrub, the leaves of which are used as a tea and a medicine.

YARD, a measure of three feet or thirty-six inches.——*Yards of a ship*, those long pieces of timber which are made a little tapering at each end, and are fitted each across its proper mast, with the sails made fast to them, so as to be hoisted or lowered as occasion serves. They have their names from the masts to which they belong.—There are several sea-terms relating to the management of the yards; as, *square the yards*; that is, see that they hang right across the ship, and no yard-arm traversed more than another: *top the yards*, that is, make them stand even.——*Yard-arm* is that half of the yard which is on either side of the mast when the yard lies athwart the ship.——*Yard-arm and yard-arm*, a phrase applied to two ships when they are so near that their yard-arms nearly touch each other.——*Yards*, for ship-building, called *dock-yards*, are some of the greatest establishments in England, particularly



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COPPER IS CHOSEN FOR MAKING BUGLE-HORNS AND OTHER MUSICAL INSTRUMENTS, ON ACCOUNT OF ITS SONOROUS PROPERTY.

If preserved to be put into other fermentable liquors at a future period, it will exert a similar fermentative action. It is also used in the making of bread, its property being to raise the dough, and thereby render it light and more wholesome. Medicinally, yeast is antiseptic and tonic; and is also used in making the fermenting cataplasm.

YEL'LOW, in chromatics, a bright colour, as its name imports. It reflects light more than any other colour, except white.

YEL'LOW BIRD (*fringilla tristis*), in ornithology, the American goldfinch, an active and gregarious bird, of a rich lemon-yellow colour; the crown, wings, and tail black. The female and young are of a brown olive colour, and in winter the male assumes the same sober livery. When caged, their song greatly resembles that of the canary.

YELLOW-FE'VER, in medicine, a malignant disease frequent in hot climates, which often suffuses the skin with a yellowish colour.

YEL'LOW-HAMMER, in ornithology, a bird of the genus *Emberiza*. Its throat and the crown of the head are yellow.

YEL'LOWS, a disease of horses, cattle, and sheep, in which the eyes are tinged with a yellow colour, proceeding often from obstructions in the gall-ducts.

YEN'ITE, a mineral consisting chiefly of silex, lime, and oxyde of manganese. It occurs both crystalized and massive; the form of the crystals being that of a rhomboidal prism. It somewhat resembles hornblende. This mineral is called *yenite* or *jenite*, in commemoration of the battle of Jena, and also *lievrite*, from the name of its discoverer.

YEO'MAN, in English polity, a *commoner*, or a plebeian of the first or most respectable class. In ancient times, it denoted one of those who held *folk-land*; that is, had no *fief*, or book-land, and therefore did not rank among the *gentry*. What he possessed, however, he possessed independently; he was, therefore, no man's vassal. To understand the true condition of the ancient yeomen, it must be observed that there were some lands which never became subject to the feudal system. These were called folk-lands, or the lands of the people. When therefore, it is said that the sovereign is the lord of the soil of all England, the assertion is not true. He is certainly the lord paramount of all fiefs; but he has no such reversionary interest in lands that were never held in fee. [See FEUDAL SYSTEM, GAVEL-KIND, &c.]——The collective body of yeomen or freeholders is termed *Yeomanry*.——*Yeomen of the Guard*, a certain description of foot-guards, who attend immediately on the person of the sovereign. They were established by Henry VIII., and their office and dress continue the same.

YEW (*taxus baccata*), in botany, an evergreen tree, common in England and in many parts of the north of Europe. The wood, which is peculiarly hard, smooth, and tough, was manufactured into bows; but, since the introduction of fire-arms, the tree is no longer planted except for ornament. The wood is beautifully veined, and susceptible of a very high polish. The leaves are extremely poisonous, and cattle are frequently destroyed by them.

YTTRIA, in mineralogy, a very rare earth, obtained from a species of *gadolinite*, discovered at Ytterby in Sweden; hence its name. It resembles glucine in several of its properties. It is smooth and insipid; is infusible alone, but vitrifies with borate of soda. It combines with the acids, and is precipitated from those solutions by ammonia and prussiate of potash. It is perfectly white; has neither taste nor smell; and its specific gravity is 4.842. The name of its metallic base is *yttrium*.

YTTRO-CE'RITE, a massive mineral, of a grayish or violet blue colour. It consists of the oxyde of cerium, yttria, lime, and fluoric acid.

YTTRO COL'UMBITE, a mineral containing a considerable portion of yttria.

YTTRO-TAN'TALITE, in mineralogy, an ore of tantalum. It occurs massive, has a metallic lustre, and is of a blackish brown colour. Under the blow-pipe it decrepitates at first, but melts, by increase of heat, into a greenish-yellow clay.

YULE, the name anciently given to Christmas, or the feast of the nativity of our Saviour.

YUNX, in ornithology, the *wry-neck*, a genus of birds of the order *Pica*, of which there is only a single species: it is allied to the woodpecker in some respects, and in others to the cuckoo. It makes no nest, but lays eight or ten eggs on the bare wood in hollow trees. In England it is a bird of passage, generally appearing a few days before the cuckoo. Its food consists of ants: it is never seen in flocks, and in pairs only during the spring and summer. Its name of *wry-neck* is derived from a habit of twisting its neck in a singular manner.

POWLING-PIECES AND TEA-URNS ARE BROWNED, BY WARMING THEM WITH A SOLUTION OF THE SULPHATE OF COPPER.



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son of Gedaliah; being the ninth of the twelve lesser prophets. He prophesied in the time of king Josiah, a little after the captivity of the ten tribes, and before that of Judah; so that he was contemporary with Jeremiah.

ZEPHYRUS, or ZEPHYR, the west wind; a wind blowing from that cardinal point opposite to the east. The poets personify it, and represent Zephyrus as the mildest and most gentle of all the deities of the woods: the character of this personage is youth and gentleness. It is also called Favonius and Occidens.

ZER'DA, in zoology, an animal of the canine genus, found in the desert of Zahara. It is of a yellowish brown colour, about ten inches in length, with a pointed nose, long whiskers, large black vivid eyes, and remarkably fleet.

ZE'RO, the point of a thermometer from which it is graduated. The zero of Fahrenheit's thermometer is fixed at the point at which the mercury stands when immersed in a mixture of snow and common salt. In Wedgwood's pyrometer, the zero corresponds with 1077° on Fahrenheit's scale. Zero, in the thermometers of Celsius and Reaumur, is the point at which water congeals.

ZERTA, or the ZERTE, a fish caught in the rivers of Italy and some other places, of the figure of a chub, and called capito anadromus, and the blike. It seldom grows to more than two pounds weight.

ZE'TA, a closet or small chamber, with pipes running along the walls, to convey into it fresh air, or warm vapour from below.——A, in the Greek letter.

ZETET'IC, in mathematics, an epithet applied to that method of investigation which proceeds by inquiry, or the solution of problems.

ZEUG'MA, a figure in grammar by which an adjective or verb which agrees with a nearer word, is, by way of supplement, referred to another more remote.

ZIB'ET, in zoology, an animal of the genus *Viverra*; the ash-gray weasel, striped with wavy black lines and an annulated tail. It resembles the Indian civet.

ZIBE'THUM, the soft, unctuous, odoriferous substance, produced by the *viverra zibetha* or civet-cat. It has a grateful smell when diluted, an unctuous subacrid taste, and possesses stimulating, nervine, and antispasmodic virtues.

ZINC, a metal of a bluish-white colour, somewhat brighter than lead; of considerable hardness, and so malleable as not to be broken with the hammer, though it cannot be much extended in this way. It is very easily extended by the rollers of the flatting mill. Its specific gravity is from 6.9 to 7.2. In a temperature 200° and 300° Fahrenheit, it has so much ductility that it can be drawn into wire, as well as laminated. The zinc thus annealed and wrought retains the malleability it had acquired. When broken by bending, its texture appears as if composed of cubical grains. On account of its malleability, it is difficult to reduce it into small parts by filing or hammering, but it may be granulated, like the malleable metals, by pouring it when fused into cold water, or if it be heated nearly to melting, it is then sufficiently brittle to be pulverised. It melts long before ignition, at about 700° of Fahrenheit's thermometer; and, soon after it becomes red hot, it burns with a dazzling white flame, of a bluish or yellow ish tinge, and is oxydized with such rapidity that it flies up in the form of white flowers called the flowers of zinc, or philosophical wool. These are generated so plentifully, that the access of air is soon intercepted; and the combustion ceases, unless the matter be stirred, and a considerable heat kept up. The white oxyde of zinc is not volatile, but is driven up merely by the force of the combustion. When it is again urged by a strong heat, it becomes converted into a clear yellow glass. If zinc be heated in close vessels, it rises without decomposition. The greater part of the zinc works are situated in the neighbourhood of Birmingham and Bristol. The manufacture of brass, which has been long one of the staple articles of these towns, was probably the cause of the introduction of this branch of industry, at the period when brass began to be made by the direct union of copper with metallic zinc, instead of calamine.

ZIN'GIBER, in botany, the Linnæan name of the plant *ginger*. The white and black ginger are both the produce of the same plant, the difference depending on the mode of preparing them. Ginger is considered as an aromatic, antispasmodic, and carminative; it is serviceable in flatulent diseases, debility, and in torpid and phlegmatic constitutions to excite brisker vascular action.

ZIR'CON, a mineral originally found in Ceylon, in the sands of rivers, along with spinel, sapphire, tourmalin, and iron sand. Zircon, hyacinth, and zirconite, are regarded as varieties of the same species. They are essentially composed of the earth zirconia, with silex, and a minute portion of iron. The common form is a rectangular four-sided prism. Zircon has a white colour, is exceedingly heavy, and rough or harsh to the touch like silex. It has neither taste nor odour, and is insoluble in water, but forms with it a kind of jelly. It melts with borax into a transparent colourless glass. It suffers in a charcoal crucible a pasty fusion by intense heat, and contracts in its dimensions, acquiring a gray colour and scintillating hardness. In this state it is very hard and insoluble in acids. Its specific gravity is 4.3. Neither air nor combustible bodies act upon it. It is soluble in water, but retains, while drying in the air, a large quantity of it, which gives it the semi-transparency and appearance of yellow jelly, or gum Arabic; and it exhibits the same vitreous fracture. It unites with all the acids and forms salts, differing from those of the other bases by being decomposable by alumine, glucine, the alkalies, and by mere heat. It fuses with alumine and silex. It is soluble even by boiling

SPIRIT THERMOMETERS ARE PREFERABLE FOR MEASURING LOW TEMPERATURES, BECAUSE SPIRIT NEVER FREEZES.

THE WICK OF A CANDLE HAVING BEEN STEEPED IN LIME-WATER AND DRIED, A PURER FLAME AND A SUPERIOR LIGHT IS PRODUCED.



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this work to follow, generally, the classification of Linnæus; and, therefore, to that we shall here confine ourselves. To proceed, then, to the Linnæan arrangement. By this, all animals are divided into six classes, of which, the characters are chiefly taken from the internal structure of the beings treated of. The six classes are as follow; viz. *Mammalia, Aves, Amphibia, Pisces, Insecta, Vermes.* 1. The class MAMMALIA comprehends all such animals as suckle their young, being furnished with proper organs for that purpose. In all the animals of this class, the plan or fabric of the skeleton, as well as their internal organs, bears a degree of general resemblance to that of Man. Their *outward* covering consists, in general, of hair; but in some few animals the hair takes the form of distinct spines or quills, as in the porcupine and hedge-hog tribe. In others, the same substance is expanded into the appearance of strong and broad scales, as in the genus *Manis;* and in others, as in the armadillo, instead of hair, we meet with strong bony zones or bands, forming a regular coat of mail. The feet of animals in the class Mammalia are generally four in number, and furnished with separate toes, guarded by claws. In some, as in the monkey tribe, the feet have the appearance of hands; and in others, they are shod with hoofs, either entire or divided. Such of the Mammalia as possess the power of flight, as in the bat tribe, the fore-feet are drawn up into slender fingers of an immoderate length, and united by a common membrane or web. In some of the aquatic Mammalia, as the seals, both the fore and hind feet are very strongly and widely webbed; and in the whale, there are, in reality, only two feet, the bones of which are inclosed in what are commonly called the fins, while the lobes of the tail answer the purpose of a pair of hind feet. The arms, or offensive and defensive weapons of the Mammalia, besides the claws and teeth, are principally the horns, inserted in various directions, and on different parts in different tribes. The horns are either perennial or annual. In the rhinoceros, the horn is perennial, and situated on the top of the nose. In the deer tribe, the horns are annual, branched, covered while young with a soft villous skin or coat; they grow from the tip, and become very solid and strong at their full size. In the ox tribe, as well as in the sheep and goat, they are hollow, mounted on a bony core, and grow from the base. The teeth in Quadrupeds, or Mammalia, are of three kinds: 1. The front or cutting teeth are of a broad, compressed structure, designed for cutting food: 2. Sharp, lengthened, or canine teeth; situated on each side the cutting teeth, and calculated for tearing and dividing the food: and 3. Incisores, or grinders, with broad, angular tops, for grinding the food. The teeth, as will be seen, afford a principal character in forming the orders and genera. In some the canine teeth are wanting; in others the front teeth; and some few are totally destitute of teeth. The tail in quadrupeds is formed by a continuation of the vertebræ, or joints of the back-bone; and is, in some, of great length, and covered with very long hair; in others it is very short; and in some few entirely wanting, as in the apes. The senses of the mammalia consist, as in man, of the organs of sight, hearing, tasting, and smelling, and the power of feeling; and in many of these animals their organs are of greater acuteness than in man. The eyes, in some quadrupeds, as the horse, are furnished with what is called a nictating membrane, or semi-transparent guard, situated beneath the eye-lids, and which can, at pleasure, be drawn over the ball of the eye for its defence. The nose, or organ of smelling, is more or less compressed or lengthened. In the elephant it is extended in a most wonderful manner into a long and tubular proboscis, or trunk, at the tip of which are placed the nostrils. The teats or *mammæ*, are found in these animals, and give rise to the Linnæan title to the whole class. The MAMMALIA are divided into seven *Orders*. 1. The first of these orders is denominated *Primates*, as containing the chiefs of the creation. Its characters are four front or cutting-teeth, above and below, and one canine or sharpened tooth on each side of these. In a mere zoological view, the human kind stands at the head of this order, forming the Linnæan genus *Homo*. The other genera of the order *Primates* are the Lemur, or Macauco, and the Bat. 2. The second order, denominated *Bruta*, is characterised by a want of front or cutting teeth, in the upper and lower jaw: the feet are armed with strong claws; their pace is in general slow; and their food in principally vegetable. Of this order the chief genera are the Rhinoceros, the Elephant, the Bradypus or sloth, the Myrmecophaga or ant-eater, the Dasypus or armadillo, and the Platypus or Ornithorynchus, or duckbill. 3. The third order, called *Feræ*, contains, among other genera, the Phoca or seal, Canis or the dog, Felis or the cat, Ursus or the bear, and Erinaceus or the hedgehog. This order contains the predacious quadrupeds, all agreeing in having teeth calculated for feeding on flesh. The front teeth, which are usually six above and below, approaching to a conical or pointed figure; the canine teeth are long, and the grinders not flattened at the top. The claws of the feet are sharp, and more or less curved in the different species. 4. The fourth order is entitled *Glires*. The principal character of the animals of this order consists of a pair of very conspicuous, strong, and lengthened teeth, placed close together in the front of both jaws. They have no canine teeth, but are furnished with grinders on each side. This order comprehends beavers, mice, squirrels, hares, and other genera. 5. The fifth order, named *Pecora*, contains all the *Cattle*, commonly so called, as oxen, sheep, goats, and others. It also comprises the camelopards, the deer tribe, the antelopes, the musk, and a few others. The ani-

CLASS III.—AMPHIBIA. HEART ONE AURICLE AND ONE VENTRICLE; BLOOD RED AND COLD; RESPIRATION VOLUNTARY.

CLASS IV.—PISCES (FISHES). HEART ONE AURICLE AND ONE VENTRICLE; BLOOD RED AND COLD; RESPIRATION BY GILLS.



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the pectoral fins: and the other two are the *cartilaginous* fishes, subdivided into the *branchiostegous*, or those whose gills are destitute of bony rays; and the *chondropterygious*, or those with cartilaginous gills. 1. The fifth of the order *Apodes* are without ventral fins, as the eels, the conger, &c. 2. The order *Jugulares*, includes fish in which the ventral fins are placed before the pectoral, as in the cod-fish and blenny. 3. The *Thoracici*, in which the ventral fins are under the pectoral, as in the perch, mackarel, &c. 4. The *Abdominales*, in which the ventral fins are placed behind the pectoral, as in the salmon and pike. 5. The *Branchiostegous* order includes fishes that are destitute of bony rays, &c. 6. The *Chondropterygious* order consists of fishes destitute of bone altogether, and possessed of cartilage instead. Such are the orders. The generic character is taken from the shape of the body, covering, structure, figure, and parts of the head, but chiefly from the branchiostegous membrane. The specific character is taken from the cirri, jaws, fins, spines, lateral line, digitated appendages, tail, and colour. It may be observed, before we quit this class of animals, that the general form and structure are finely adapted to the peculiarity of the element in which they live. Being of themselves nearly of the same specific gravity as the water which they inhabit, their small fins are all that is requisite to enable them to move with ease, and steer their course with pleasure. V. The fifth class of animals in the Linnæan system contains INSECTA. The study of this branch of science is denominated ENTOMOLOGY; for the particulars of which we therefore refer to that article. VI. The last class of the animal kingdom, according to the Linnæan system, is denominated VERMES or *worms*. This class is not only arranged the last in order, but the creatures which it contains, when compared with those forming the other classes, seem to be the least perfect, possessing neither eyes, nor ears, nor head, nor feet. Many of them, as the corals and sponges, approach very near to vegetables; and others, as the madrepores and shell-fish, resemble, in their coverings at least, certain productions of the mineral kingdom. All, however, may, no doubt, be considered as perfectly complete, both in structure and endowments, for the station which they are designed to hold, and for the purposes which they are intended to answer in the general plan of creation. The class, notwithstanding its name, *Vermes*, or *worms*, includes a vast variety of very different animals, as snails, slugs, shells, and their inhabitants; corals; and an indefinite variety of microscopic animals, called *Infusoria*, from the circumstance of their being detected in waters, in which vegetable matter of some kind or other has been steeped. The different orders, which are five in number, are the following:—1. *Intestina*: this order includes worms with a filiform, or thread-like body, of equal thickness, and smooth; and also the common earth-worm, the worms found in the intestines of different animals, the leech, and a few others. 2. *Mollusca*: This order contains animals of a simple form, naked, that is, without a shell, with members, or additional parts, not to be found in those of the first order. These members, however, do not answer to the feet, or wings, or fins of quadrupeds, birds, or fishes. In some they are called rays, as in the asterias, or star-fish; in others, tentacula, or feelers, as in the sepia, or cuttle-fish; and in others, as in the limax, or slug, they are denominated horns. 3. The third order is named *Testacea*, or worms of a soft and simple form, covered with a shell. These are characterized by the shell or its calcareous covering, which each animal forms for itself by a concretion, or exudation, from the surface of the body. There are many different genera of shells; and the study of this order of the class Vermes has obtained a distinct scientific name, namely, *Conchology*. This branch of natural history is very popular, on account of the elegance and beauty of the shells, and of the easy method of arranging and preserving them. As a branch of science, the objects of conchology are separated into three divisions, namely, 1. *Multivalves*, that is, shells with many valves; as the *Chiton*, *Lepas*, and *Phloas*. 2. *Bivalves*, or shells with two valves; as, the *Ostrea*, oyster; *Mytilus*, mussel, &c. 3. *Univalves*, or shells with one valve only, which division is subdivided into those with a regular spire, as the *Argonauta*, the *Nautilus*, the *Helix* or snail, &c. 4. *Zoophyta*. This order comprehends composite animals efflorescing like vegetables, included in a calcareous crust. Many thousands of them live together, and are so connected both by their calcareous covering and their softer fleshy part, as to be considered as a single production. They increase in bulk, and mostly branch out like plants; and they may, like plants, be propagated by slips. We have already observed, that this order of animals constitutes a sort of connecting link between itself and the other two kingdoms of nature. It is separated into two divisions: 1. Those with a hard, calcareous stem, of which, among others, the madrepores and millepores are examples. 2. Those with a softer stem: this division includes ten genera; of which the sponge, the coralline, and polypus, are good examples. 5. *Infusoria* This order has been added to those of Linnæus, to include such microscopical worms as have been discovered in stagnant or other waters and fluids. The animals included in it are divided into, 1. Those that have external organs. 2. Those without external organs, and flattened: and, 3. Those without external organs, and round.——In conclusion, we beg to refer the reader to the different zoological articles interspersed throughout this volume, for the habits, properties, &c. of individuals in each class, as well as for numerous observations of a general nature, which it would be mere tautology to repeat.





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# SUPPLEMENT.

ABATTOIR, the name given by the French to the public slaughter-houses established in Paris by a decree of Napoleon, in order that the cattle should not be driven through the capital, to the annoyance and danger of the inhabitants. These large building consist of slaughter-rooms, built of stone, with every arrangement for cleanliness, &c., and of ox and sheep pens.

ABI'ETINE, a resinous substance obtained from the Strasburgh turpentine.

AB'RAZITE, a mineral which occurs in the volcanic rocks of Capo di Bovo, near Rome.

ACAL'YCINE, having neither calyx nor flower-cup; a botanical term.

ACANTHOPO'DA, a tribe of coleopterous insects (beetles), remarkable for their broadish, flattened legs, armed exteriorly with spines.

ACCLI'MATISE, to accustom to the temperature of a foreign climate.

ACEPH'ALOUS, without a head.

ACEPH'ALA, a class of molluscous animals that have no apparent head, and of which the oyster is an example.

ACEPHALOPO'DIA, that species of partial agnesia in which the head and feet are wanting or defective.

A'CETONE, pyro-acetic spirit.

ACH'IRITE, a mineral consisting of oxide of copper, carbonate of lime, silica, and water.

AC'MITE, a mineral of a brownish black colour, opaque and brittle. It is found in Norway, imbedded in granite.

ACON'ITINE, the narcotic principle of the *aconite*. It combines with the acids, and forms uncrystallizable salts.

A'CROPY, imperfect articulation.

ACRO'MIAL, pertaining to the humeral extremity of the shoulder-blade.

ADEN'ALGIA, a pain seated in a gland.

ADEN'IFORM, of a gland-like shape.

ADIAPNEU'STIA, diminution or obstruction of perspiration.

ADIARRHŒ'A, suppression of any of the natural evacuations.

ADULA'RIA, moonstone; a transparent white coloured variety of prismatic felspar, with a pearly opalescence.

ADVERSIFO'LIATE, a botanical term denoting that the leaves are arranged opposite each other on the same stem.

AER'IIDES, air plants; a genus of perennials, natives of China and the East Indies.

ÆSTHET'ICS, the power of perception through the medium of the senses. In the *fine arts* it denotes the science which derives the first principles in all the arts from the effects which certain combinations have on the mind, and links together with feeling the different parts of a composition.

AGENA'SIA, any anomaly of organization, consisting in absence or imperfect development of the parts.

ANÆSTHE'SIA, a state of insensibility to pain in surgical operations, &c., superinduced by the inhalation of certain compound chemical bodies, viz. nitrous oxide, sulphuric ether, and chloroform or perchloride of formyle. These agents are entirely different from each other in their chemical constitution; hence their elementary composition affords no apparent clue to the explanation of their anæsthetic properties.

ALA'LIA, defect of articulation.

ALDINE EDITIONS, those editions of the Greek and Roman classics which were printed by the family of Aldus Manutius, first established at Venice about 1490.

AL'IPED, any animal whose toes are connected by a membrane, and which serve for wings; as in the *bat*.

AL'KALOID, a substance possessing some of the properties of an alkali.

ALMAN'DINE, a beautiful red-coloured mineral, usually termed *precious garnet*.

ALVE'OLITE, a marine fossil, occurring in the Portland stone, composed of numerous concentric beds, each formed by the union of hemispherical cells.

AL'VINE, appertaining to intestinal excretions.

AM'ADOU, a species of agaric, found in the trunks of old trees, which when boiled in water, dried, beaten with a mallet, and finally impregnated with a solution of nitre and dried, constitutes an inflammable material known as *pyrotechnic sponge*, or *German tinder*.

AM'BREINE, a fragrant substance extracted from ambergris, by digestion with alcohol. Ambreic acid is produced by heating this substance with *nitric acid*.

AM'IDINE, the soluble basis of starch.

ANAN'DROUS, plants whose flowers are destitute of stamens; thence called female flowers.

ANASTOMO'SIS, inosculation: applied to the opening of one vessel into another, as arteries, veins, and lymphatics, in the animal body.

ANDROPET'ALOUS, a term used to describe double flowers, which are produced by the conversion of the stamens into petals, as is exemplified in most double flowers.

ANE'SIS, remission or diminution of the symptoms that mark any disease.

ANGIOCAR'POUS, a term applied to seed-vessels which are enclosed in a covering that does not form part of themselves; as the filbert, &c.

ANHELA'TION, difficult respiration, with a sense of suffocation.

ANONA'CEÆ, an extensive natural order of ever-green, exogenous plants, trees, and shrubs, whose fruit is sometimes edible.



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which nature, art, everything tangible, can be copied, with a precision which defies the chisel, even when guided by the most skilful hand, and directed by the most gifted talent. The machine, too, can be graduated so as to give reduced copies of any statuary; which shall, in their miniature, be perfect and exact copies of the originals in everything else but the size,—preserving every line, furrow, and dimple, and giving prominence to muscles and veins, and every particular lineament and feature, in exact proportion. By the same machinery, the most correct perfect bas-relief profile likenesses may be cut, on the hardest material and of any size required, from half an inch, to full life-like size.

BUTYRINE, a substance which exists in butter (*butyrum*), combined with oleine, stearine, and a very small quantity of butyric acid.

CALCAI'RE GROSSIER [Fr.], a coarse limestone often passing into sand, and abounding in marine shells; it belongs to the eocene tertiary period.

CALCAI'RE SILICIEUX [Fr.], a compact silicious limestone, belonging, like the calcaire grossier, to the eocene tertiary period.

CAMARIL'LA [Sp.], the private chamber of the sovereign of Spain. The term is generally applied to his or her immediate confidants, and is then synonymous with *clique*.

CAMPES'TRAL, pertaining to the open fields: applied as the specific name of many plants.

CAM'PHINE, a hydro-carbon, identical with pure oil of turpentine.

CARPOL'OGY, that branch of botany which treats of fruits.

CAR'SOETYPE, a machine, invented by Mr. Kingston, for taking portraits with great accuracy, and in an extremely short space of time. The portrait, in its shadowings, is afterwards completed by art on a ground of marble.

CA'SEUM, the purified curd of milk; the basis of cheese.

CASH'MERE, a delicate kind of woollen fabric manufactured from the downy wool found about the roots of the hair of the Thibet goat. The fine *shawls* made of this material were first imported from the kingdom of Cashmere, but they are now well imitated in this country and France.

CATACAUS'TICS, in optics or geometry, the *caustic* curves formed by the reflection of light, in contradistinction to *diacaustic* curves, which are formed by refraction.

CATALOGUE RAISONNE'E, a catalogue of books classed under heads and particularly described.

CATHARTINE, a substance of a reddish colour and nauseous bitter taste, obtained from the leaves of senna.

CATH'ODE, the surface at which electricity passes out of a body, supposing the current to move in the apparent direction of the sun.

CER'ATRIN, the bitter principle of Iceland moss.

CES'PITOSE, in botany, *cespitose plants* are such as produce many stems from one root, and which have all their leaves radical, so as to resemble turfs.

CHARTA'CEOUS, a botanical term designating the paper-like texture of most leaves.

CHLO'RAL, a new chemical substance, described by Liebig, consisting of chlorine, carbon, and oxygen. It is a limpid, colourless liquid, similar in odour and appearance to the oily fluid which chlorine forms with olefiant gas; but differs from it essentially in density and volatility.

CHLO'ROFORM [called also *Chloroformyle*, or the *Perchloride of Formyle*], a new anæsthetic agent, discovered by Dr. Simpson, of Edinburgh, and used as a substitute for sulphuric ether in surgery and midwifery. Its constituents are two atoms of carbon, one of hydrogen, and three of chlorine. It is a dense, limpid, colourless liquid, readily evaporating, and possessing an agreeable, fragrant, fruit-like odour, and a saccharine pleasant taste. As an inhaled anæsthetic agent it is said to possess over sulphuric ether the following advantages:—1. A greatly less quantity of chloroform than of ether is requisite to produce the anæsthetic effect. 2. Its action is much more rapid and complete, and generally more persistent. 3. The inhalation and influence of chloroform are far more agreeable and pleasant than those of ether. 4. Its perfume is not unpleasant; nor does it exhale in a disagreeable form from the lungs of the patient, as so generally happens from the use of sulphuric ether. 5. Being required in much less quantity, it is much more portable and transmissible than sulphuric ether. 6. No special kind of inhaler or instrument is necessary for its exhibition. A little of the liquid diffused upon the interior of a hollow-shaped sponge, or on a pocket-handkerchief, or a piece of linen or paper, or held over the mouth and nostrils so as to be fully inhaled, generally suffices in about a minute or two to produce the desired effect.

Chloroform may be made and obtained artificially by various processes,—as by making milk of lime, or an aqueous solution of caustic alkali act upon chloral;—by distilling alcohol, pyroxylic spirit, or acetone, with chloride of lime;—by leading a stream of chlorine gas into a solution of caustic potass in spirit of wine, &c. It was discovered and described by Soubeiran, in 1831; and its composition was first accurately ascertained by the distinguished French chemist Dumas, in 1834; but no person (as far as Dr. Simpson was aware) had used it by inhalation, or discovered its remarkable anæsthetic properties, till the date of his own experiments.

At a meeting of the Medical Society of London, Dec. 6. 1847, Dr. Cogswell read the following interesting account of the *History of Chloroform, and its use as an Anæsthetic Agent*:—"However Dr. Simpson's claim may be decided upon as to the priority of administering chloroform vapour, (and it now appears the honour is contested by some person or persons alluded to by Mr. Bell, with regard to the human subject, and by Mr. Flourens who tried it on an animal,) he is certainly entitled to the credit of giving it a world-wide reputation. From the historical references of



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"I repeat, that the condition of anæsthesia not only actually preserves the patient in surgical practice from agony and torture, but actually preserves him too from the chances of danger and death. And I firmly believe, that the superinduction of anæsthesia in obstetric practice will yet be found to diminish and remove the perils, as well as the pains of labour."

CHOLES'TERIC ACID, a peculiar acid formed from *cholesterine* and *nitric acid*. It is in crystals of a yellowish white colour, scarcely soluble in water, but perfectly so in boiling alcohol.

CHOLES'TERINE, a pearly substance found abundantly in human biliary calculi.

CHONDROL'OGY, a description of the cartilages of the human body.

CHORE'A, a disease which manifests itself in convulsive motions of the limbs, and is commonly called St. Vitus's dance.

CICERO'NE [Ital.], any individual who acts as a *guide*.

CIL'ERY, in architecture, ornaments of foliage and drapery on the heads of columns.

CLINK'STONE, Phonolite; a kind of felspathic rock, which yields a metallic sound when struck.

CLINOM'ETER, an instrument for measuring the dip of mineral strata.

CLUNCH, the name given to an indurate clay found dividing the coal-seams.

COAG'ULUM, the tenacious substance formed from a fluid by coagulation.

CONCERTANTE [Ital.], those parts of a musical composition, which continue throughout the piece.

CONCETTI [Ital.], ingenious but misplaced thoughts or terms of expression.

COUNTERSINK, to make a cavity in timber-work for the reception of a plate of iron, or the head of a screw or bolt.

COV'IN, in law, a collusive agreement between two or more to the prejudice of a third person.

CRORE, in commerce, a hundred lacs of rupees.

CROTON'IC ACID, an acid obtained from croton oil.

CYANOMETER, an instrument contrived by Saussure for determining the deepness of the tint of the atmosphere.

CYTISINE, a bitter, nauseous, and poisonous principle, detected in the seeds of the *Cytisus laburnum*.

DA'MAR, a kind of resin or indurate pitch, exuding spontaneously from various trees, indigenous to most of the Indian islands. There are several sorts, and among them one which is in common use, called *damer-pitch*, or white resin.

DEBA'CLE [Fr.], a geological term, to designate a violent rush of waters, which, overcoming all opposing barriers, carries with it stones, rocks, &c., and spreads them in all directions.

DECARBONIZATION (of cast-iron), a process resorted to in order to convert cast-iron into steel and malleable iron.

DECOM'POSITE, a botanical term applied to leaves of plants, when the primary leaf is so divided that each part forms a compound leaf; and to flowers which contain within a common calyx several that are smaller.

DER'MATOID or DER'MOID, resembling skin.

DERMATOL'OGY or DERMOL'OGY, a discourse or treatise of the skin.

DERMOG'RAPHY, the anatomical description of the skin.

DIACRI'TIC (marks), marks used to distinguish letters, between the forms of which much similarity exists.

DIATH'ESIS, a natural predisposition to certain diseases.

DICH'ROISM, a property of certain crystallized bodies, of appearing under two distinct colours, according to the direction in which the light is transmitted through them.

DI"GITALINE, a powerful poison, derived from the *digitalis purpurea*, or foxglove.

DOLAB'RIFORM, hatchet-shaped. In botany, applied to leaves which are cylindrical at the base, grow broader at the upper part, and are thick on one edge and very thin on the other.

EISTEDD'FOD (from the Welsh *eisteddi*, to sit). The assemblies of the Welsh bards.

E'LAINE or O'LEINE, the oily principle of fatty substances, which may be expelled by pressure, or by digesting the fat in boiling alcohol; as it cools, the stearine precipitates, and the elaine collects upon the surface of the supernatant liquor.

ELATE'RITE, a bituminous mineral, brown, massive, and elastic; it is sometimes termed *mineral caoutchouc*.

ELECTRIC TEL'EGRAPH. At the late meeting of the British Association, the learned chairman, Sir R. H. Inglis, thus adverted to the progress of the Electric Telegraph, from a report presented to the Legislative Council and Assembly of New Brunswick, relative to a project for constructing a railway, and with it a line of electro-magnetic telegraph, from Halifax to Quebec: —

"The system," said Sir R. H. Inglis, "is daily extending. It was, however, in the United States of America that it was first adopted on a great scale, by Prof. Morse, in 1844; and it is there that it is now already developed most extensively. Lines for above 1,300 miles are in action, and connect those States with Her Majesty's Canadian provinces; and it is in a course of development so rapid, that, in the words of the report of Mr. Wilkinson to my distinguished friend, his Excellency Sir W. E. Colebrooke, the Governor of New Brunswick, to which I have just adverted, 'No schedule of telegraphic lines can now be relied upon for a month in succession, as hundreds of miles may be added in that space of time. So easy of attainment does such a result appear to be, and so lively is the interest felt in its accomplishment, that it is scarcely doubtful that the whole of the populous parts of the United States will, within two or three years, be covered with a network like a spider's web, suspending its principal threads upon important points along the sea-board of the Atlantic on one side, and upon similar points along the lake frontier on the other.' I am indebted to the same report for another fact, which I think the Association will regard with equal interest: 'The confidence in



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GHEE, a liquid butter, made in the East Indies from the milk of buffaloes.

GLAU'COUS, of a gray bluish colour; applied to leaves, &c. of plants which are covered with a fine sea-green mealiness, as seen on the underside of cabbage-leaves, &c.

GLYCYR'RHIZINE, the saccharine juice of liquorice.

GONIOMET'RICON, an instrument to enable persons unskilled in drawing to find the perspective direction of the vanishing or receding lines of objects. The mode of using the instrument is thus described by Mr. Earl: —Place the instrument between the eye and the object to be outlined, which is done by holding it with the finger and thumb of the left hand, at a point between the top of the arc and the universal joint. It is then fixed in that position at an angle of 60 degrees with the line of vision; a task accomplished by taking a small ivory acorn attached to the instrument by a string, and placing it firmly between the teeth, when the connecting string is stretched to its fullest tension. This done, the instrument is moved till one of the indicators coincides with the line whose downward or upward direction it is sought to ascertain. That point discovered, the instrument is laid flat on the drawing-paper with the horizontal bar parallel with its lower line, and gently moved to the required position, when the line of direction is ruled off from the edge of the indicator. The bottom of the instrument is set with divisional points, to assist in sketching the proportions of figures, trees, and objects of irregular form or outline.

GUILLOCHE (Fr.), in architecture, an ornament composed of continuous curved fillets.

GUN COTTON, an explosive compound of vegetable origin, combined with certain acids; it is applicable to mining purposes and to projectiles, and is proposed as a substitute for gunpowder. The best cotton for the purpose is said to be that which is freed from extraneous matters; and it is desirable to operate on the clean fibres in a dry state. The acids are, nitric acid of from 1·45 to 1·50 specific gravity, and sulphuric acid of 1·85 specific gravity. The acids are mixed together in the proportion of one measure of nitric acid to three measures of sulphuric acid, in any suitable or convenient vessel not liable to be affected by the acids. A great degree of heat being generated by the mixture, it is left to cool until its temperature fall 60 or 50 degrees Fahr. The cotton is then immersed in it; and, in order that it may become thoroughly impregnated or saturated with the acids, it is stirred with a rod of glass or other material not affected by the acids. The cotton should be introduced in as open a state as practicable. The acids are then poured or drawn off, and the cotton gently pressed by a presser of glazed earthenware to press out the acids, after which it is covered up in the vessel, and allowed to stand for about an hour. It is subsequently washed in a continuous flow of water, until the presence of the acids is not indicated by the ordinary test of litmus paper. To remove any uncombined portions of the acids which may remain after the cleansing process, the patentee dips the cotton in a weak solution of carbonate of potash, composed of one ounce of carbonate of potash to one gallon of water, and partially dries it by pressing, as before. The cotton is then highly explosive, and may be used in that state; but, to increase its explosive power, it is dipped in a weak solution of nitrate of potash, and, lastly, dried in a room heated by hot air or steam to about 150 degrees Fahr.

*Advantages and Disadvantages of Gun-Cotton in Fire-arms.*—These have been thus summed up by Professor Brande, in a paper read by him to the Royal Institution. The disadvantages are:—that the effects are less regular than those of gunpowder; that it is more dangerous, because inflaming at a lower temperature; that it does not take fire when compressed in tubes; that it burns slowly in all kinds of cartridges; that guns and pistols must be altered to admit of its use; that it is not adapted for the use of the army; that the barrel of the gun is moistened by the water produced during combustion. The advantages, on the other hand, may be stated as follows:—its extreme cleanliness, leaving no residue after combustion; its freedom from all bad smell; the facility and the safety of its preparation; the possessing treble the force of gunpowder; its explosion producing no smoke and less noise than that of gunpowder; its filamentary nature admitting of its being used overhead in mining operations; its not being liable (as a granulated substance is) to the accidents of leakage; its occasioning very little recoil. —*Athenæum.*

GUR'RY, a native fortification in India, generally consisting of a wall flanked with towers.

GUTTA PER'CHA, a vegetable substance derived from the sap and milky juice of a tree belonging to the natural order *Sapotaceæ*, found in abundance in the island of Singapore, and in some dense forests at the extremity of the Malayan peninsula. The tree attains a considerable size, even as large as six feet in diameter; is plentiful in Sarawak, and most probably all over the island of Borneo. The timber is too loose and open for building purposes; but the tree bears a fruit which yields a concrete oil, used for food. Gutta Percha quickly coagulates on exposure to the air. For collecting the sap the trees are felled, barked, and left dry and useless: from twenty to thirty pounds is the average produce of one tree; but so great is the demand for the article, that the forests will soon be cleared of the Gutta trees; whereas, it is believed that a constant and moderate supply might be secured by incisions in the bark, as in the case of caoutchouc. The Gutta is received in scraps, or in rolls of thin layers. It is first freed from impurities by devilling or kneading in hot water, when it is left soft and plastic, and of a whitish grey colour. When thus prepared, the Gutta has many curious properties. Below the temperature of 50 deg. it is as hard as wood, but it will soon receive an indentation from the finger-nail. When softened in hot water, it may easily



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passing a current of chlorine over meconine infusion.

MECON'IC ACID, an acid obtained from *meconium* (opium). It crystallizes in white transparent scales, and is converted into oxalic acid by dilute nitric acid.

MEG'ASCOPE, an optical instrument for the examination of bodies of large dimensions.

MEL'ANITE, the black garnet; a mineral of a velvety black colour, found in the basalt of Bohemia, and in a rock at Frescati, near Rome.

MEMBRANOL'OGY, that branch of anatomy which treats of the membranes of the body.

MO'LECULES, the smallest particles into which a mass can be conceived to be divided. They are either *integrant* or *constituent*; the former being the smallest particle into which a simple body can be conceived to be divided, or into which a compound body can, without being resolved into its elements; the latter are the molecules of each element which form an integrant molecule of a compound.

MONOPOL'YLOGUE, an entertainment in which a single performer sustains many characters.

MONOTHAL'MOUS, in conchology, one chambered, *i. e.* when the chamber of the shell is not divided by partitions.

MONOTHE'ISM, the doctrine or belief of the existence of one god only, opposed to *polytheism*, or plurality of gods.

MORA'INE, the stony detritus found at the bases of glaciers in Switzerland.

MU'TULE, a projecting ornament of the Doric cornice, which occupies the place of the modillion in the other orders, and is signed to represent the ends of rafters.

MY'RICINE, the ingredient of wax which remains after digestion in alcohol.

MYROX'YLON, the balsam tree of Tolu (*Myroxylon peruiferum*), which affords the Peruvian balsam. There are three sorts of the balsam, that of incision, the dry balsam, and the balsam of lotion.

NOSOL'OGY, a classification of diseases, with names and definitions, according to the distinctive character of each class, order, genus, and species.

NOS'TALGY, a vehement desire to return to one's native country, attended with melancholy, want of appetite, and other symptoms indicative of the restless and unhappy state of mind of the individual.

NOS'TOC, a vegetable jelly of a greenish colour, frequently seen on sandy soils in summer, immediately after rain. It is vernacularly named *witches' butter*.

NUL'LAH, the name given in India to a natural canal, or small branch of a river.

OAST, a kiln for drying hops.

OLIV'INITE, an ore of copper of an olive-green colour. It is a hydrated phosphate of copper, occurring with quartz, in micaceous clay-slate.

OMOCOTYLE, the cavity in the extremity of the neck of the scapula, in which the head of the humerus is articulated.

OPHICLEI'DE, a powerful bass wind instrument (of modern introduction) in a "brass band."

OR'GANZINE, a description of silk usually imported from Italy into this country.

ORNITH'OLITE, a fossil bird. The name is also applied to stones of various colours, bearing the figure of birds.

OXY'OPHY, the faculty of seeing more acutely than is usual, from a preternatural sensibility of the retina.

PALÆOG'RAPHY, the art and practice of describing ancient manuscripts, inscriptions, &c.

PALÆONTOL'OGY, the study of fossil remains, whether of animal or vegetable origin.

PALM-WINE, a liquor obtained in the East Indies by the incision of a species of the palm. It is there called *toddy*.

PAL'NINE, a white substance somewhat resembling wax when first obtained, but which hardens by being kept, and assumes a resinous appearance. It dissolves in alcohol and ether, and saponifies with potash ley.

PANOPHO'BIA, that kind of melancholy which is chiefly characterized by groundless fears.

PANSTER'EORA'MA, the model of any town or country in cork, wood, plaister, or any other material.

PANTECHNICON, a repository or warehouse where every kind of workmanship is exposed for sale.

PARACROS'TIC, a poetical composition in which it is necessary that the first verse should contain in order all the letters with which the succeeding verses commence.

PAS'SIM, a word of reference in books, signifying here and there; throughout; in many different places.

PASTICCIO [Ital.], in music, a word used to denote an opera composed of detached airs, by different composers, occasionally introduced.

PEM'PHIGUS, an eruption, consisting of vesicles of various sizes, and very generally attended with fever.

PENDEN'TE LI'TE [Lat.], during the progress of the suit; while the suit is undetermined.

PENT-ROOF, a roof of any building or shed formed like an inclined plane, the slope being all on one side.

PERACU'TE, very acute; applied to diseases when they are very severe.

PETROLINE an unctuous substance obtained from the petroleum of Rangoon, or from the tar obtained by the distillation of various productions, both animal and vegetable, but especially the tar of the beech tree.

PISIFORM, granular iron-ore is called *pisiform* iron-ore, from its containing small rounded masses like peas in size.

PISTILLIFEROUS, bearing pistils; a term applied to flowers or florets, which contain one or more pistils, but no stamens.

PITCH'BLENDE, a compound of the oxides of uranium and iron.

PIZZICA'TO [Ital.], a musical term signifying that the strings of the violin must be pinched with the fingers.

PLAS'MA, a grass-green variety of rhombohedral quartz, occurring in beds with common chalcedony. It was formerly used for ornamental purposes, but is now in little esteem.



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TICUM), a substance obtained from rhubarb (*Rheum*), by treating it with ether. It is obtained in minute crystalline grains, of a deep yellow colour, but having no taste or smell; and is remarkable as a solvent of iron.

RIDOTTO [Ital.], a favourite public amusement in Italy, consisting of music and dancing.

RIMOSE, a zoological term, to denote that the surface of any part possesses numerous minute narrow excavations, running into each other.

ROMA'IC, the language of modern Greece.

ROMANES'QUE, in painting and the fine arts generally: appertaining to fable or romance; when used in reference to languages, it means the common dialect of Languedoc, and other parts in the south of France.

ROSA'IC ACID, a peculiar acid of a rose colour, deposited from the urine of persons labouring under gout and inflammatory fevers.

ROSE-ENGINE, an appendage to the turning-lathe, by which a surface of wood or metal is engraved with a variety of curve lines.

ROSTRATE, a term applied to parts of shells, &c., which have a beak-like form.

RUST. We copy the following from the "Year Book of Facts:"—All the common metals, except tin, rust; they become duller and duller up to a certain degree, lose gradually their lustre, and then the process goes no further. Instead of this rusting being a destroyer of the metal, it is a preserver; for, even in the case of iron, which rusts quickly, as compared with other metals, if it be dipped into tin, it comes out coated with it, and it is preserved beautifully. If iron be exposed for a couple of hours to the action of water, the iron becomes quite corroded; but when tinned, the iron is protected, and the tin itself appears unaffected. How is it that the metal can protect itself, and the iron that is under it? It is simply owing to the substance formed on the surface by the attraction of oxygen, which is so adherent to the metal beneath. It gives a protection which no varnish, or any kind of application, can afford. Take a copper or a tin plate, they are both protected in their metallic state by a thin coat formed in the first instance of oxide. It is only because this coat is so exceedingly compact, close, and adherent, that it passes for nothing — a mere film of tarnish. You think you see, or touch, a piece of tin; you cannot detect the film, except by close examination. We know it is there, but it is only by optical phenomena that we can measure its thickness. It seems clean and beautiful, but if you rub it off, you give the metal beneath a new character; the beautiful lustre, however, passes off the first moment up to a certain point. The body formed by the combination of oxygen with iron is different. The oxide does not adhere to the metal beneath; it forms upon it little spots, or porous tumuli. It is not an investing varnish, but the process goes on through the pores of the rust, especially if the metal be placed in a damp atmosphere. This is the reason why we find a difference between copper, iron, tin, and lead, when used for roofs, or other external purposes. The iron alone is eaten into and destroyed, by this want of adhesion in its rust to the surface of the metal. "It is curious to observe, in some cases, how tin, a metal, having a slight attraction for oxygen, protects other metals from oxidation. In Canada, tin plate is used for the roofs of houses; I am told that you are dazzled by the lustre of the setting sun upon the roofs; and there, although it is exposed to the atmosphere year after year, it does not decay, because the superficial coat of oxide protects the tin and iron beneath."—*Faraday.*

SACCHAR'OID, a term applied to rocks which have a texture resembling that of loaf sugar.

SEISMOM'ETER, an instrument for measuring the shock of earthquakes and other violent concussions.

SEMIPAL'MATE, in zoology, when the toes are connected by a web extending only half their length.

SER'APHINE, a musical wind instrument, or kind of chamber organ.

SEWING MACHINE. The American papers mention a machine invented by one Elias Howe, which sews beautiful and strong seams in cloth with great rapidity. The following claims are in the words of the patentee:—The lifting of the thread that passes through the needle eye by the lifting rod, for the purpose of forming a loop of loose thread that is to be subsequently drawn in by the passage of the shuttle; said lifting rod being furnished with a lifting pin, and governed in its motions by the guide pieces and other devices. The holding of the thread that is given out by the shuttle so as to prevent its unwinding from the shuttle bobbin, after the shuttle has passed through the loop; said thread being held by means of the lever, or clipping piece. The manner of arranging and combining the small lever, with the sliding box in combination with the spring piece, for the purpose of tightening the stitch as the needle is retracted. The holding of the cloth to be sewn by the use of a baster plate, furnished with points for that purpose, and with holes enabling it to operate as a rack, thereby carrying the cloth forward, and dispensing altogether with the necessity of basting the parts together.—*Mech. Mag.*

SIL'HOUETTE, in the fine arts, the representation of an object in a black colour, with the prominent features lightened, and the shadows indicated by being touched with gum.

SOIREE [Fr.], an evening party of ladies and gentlemen, at which occasional addresses are delivered on miscellaneous subjects by some of the company, refreshments being provided, and other means of entertainment offered by the host.

SOSTENU'TO [Ital.], in music, a term used to denote the unbroken continuance of sounds.

SPON'GIOLE, in vegetable physiology, organs called *spongioles*, from their being composed of common cellular spongy tissue,



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